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Is political risk a threat to sovereign debt sustainability?

Samantha Ajovalasit
University of Palermo, IT.
Andrea Consiglio
University of Palermo, IT.
Giovanni Pagliardi
BI Norwegian Business School, NO.
Stavros A. Zenios
Durham University, UK; University of Cyprus, CY;
Cyprus Academy of Sciences, Letters, and Arts, CY; Bruegel, BE.[1]

ABSTRACT
Political risk is a significant determinant of sovereign debt dynamics. We estimate the sensitivity of bond yields and economic growth to a country-level broad proxy of political risk and develop a stochastic debt sustainability analysis optimization model with both yields and growth channels to show that political risk can render debt unsustainable, triggered by changes in the political rating level, volatility, or both. In contrast, existing models that neglect political risk would incorrectly predict sustainability. Importantly, we uncover political risk effects in developed countries, going beyond the emerging markets of earlier literature. We establish a positive predictive relation of structural reforms to political ratings, and benchmark reforms against a large-scale quantitative easing program and find them comparably effective, highlighting their significance in restoring debt sustainability. We also establish the effect of political risk on the optimal choice of debt financing maturities. We validate the model out-of-sample on the Italian 2014-2019 reforms, showing that it would have predicted the country's debt more accurately than existing models. Likewise, a simulation of the French 2024 snap elections finds a much higher risk of debt unsustainability than that estimated if the political shock is omitted.

Keywords: Debt management; debt sustainability; political risk; structural reforms.
JEL Codes: E52, E62, F30, F34, G15, G18, H62, H63, H68.

[1] Corresponding author: Stavros A. Zenios stavros.zenios@durham.ac.uk

1 Introduction

The sovereign debt of advanced economies, which spiked from COVID-19, is compounded by political shocks, with trade and military wars (Ukraine, Middle East), collapsing government coalitions (Canada, Germany), and snap elections (France) putting pressure on public finance. Political risk is a well-established determinant of economic growth (Alesina et al., 1996) and asset prices (Kelly et al., 2016), including bond returns (Brogaard et al., 2020), but this was primarily shown for emerging markets.[1] A forward-looking study on the sovereign debt effects of political risk is missing although debt sustainability analysis takes center stage in international institutions and the European Union new fiscal rules (European Commission, 2024) and despite concerns about the sustainability of public finances even for advanced economies.[2] We fill this gap.

We document significant political risk effects in developed markets, in addition to emerging markets, through bond yields and growth channels. The joint effect is large: a ten percentage point increase in political risk increases bond yields by 106 basis points and lowers growth by two percentage points, on average. The marginal effect is only slightly smaller in developed than in emerging markets, although political risk is higher in the latter. We develop a stochastic debt sustainability analysis (DSA) model following the tradition of international institutions (Bouabdallah et al., 2017; European Commission, 2020; IMF, 2022) with debt financing and tail risk optimization (Zenios et al., 2021), incorporating both political risk channels.

Calibrating the model on representative eurozone countries, we show that political risk can expose debt as unsustainable when traditional DSA would predict sustainability. Conversely, reforms can lower political risk and stabilize debts. We benchmark reforms against the ECB's pandemic quantitative easing program and find them comparable in lowering debt ratios. We also validate the model out-of-sample on the Italian 2014-2019 reforms, showing that it would have predicted the country's debt more accurately than traditional DSA, and simulate the French 2024 snap elections, demonstrating a higher risk of debt unsustainability than estimated without the political shock.

Political risk refers to the probability of discontinuities in the economic environment (Kobrin, 1982) due to political forces and events (Sottilotta, 2016). Early works considered political risk synonymous with government stability, and the World Bank used political assassinations, coups, or revolutions as proxies. For developed economies, the focus has been on political cycles, with Alesina et al. (1997) establishing their effect on the business cycle and Belo et al. (2013) on markets. However, political risk increases in the lead-up to political events, prompting the development of proxies using expert ratings, e.g., International Country Risk Guide-ICRG (PRS, 2005), World Bank (World Bank, 2018), World Economic Survey (Becker and Wohlrabe, 2007). These ratings are priced by the markets even when orthogonalized to economic ratings (Gala et al., 2023) and have been used in portfolio choice (Smimou, 2014) or political risk hedging (Lotfi et al., 2025).

We use the monthly ICRG composite political rating on a panel of 46 countries spanning 1999-2021 to document political risk as an economically and statistically significant determinant of sovereign bond yields and growth.[3] European Commission (2019) expressed the view that political risk warrants consideration in debt analysis with caveats since empirical evidence on the economic effects of political risk is gathered from emerging economies (Bekaert et al., 2014a; Block and Vaaler, 2004; Eichler, 2014). However, advanced economies are not immune to political risk (Hassan et al., 2024). For instance, the US experienced six ICRG

[1] For this extensive literature see, e.g., Aisen and Veiga (2013); Bekaert et al. (2014a); Block and Vaaler (2004); Eichler (2014); Gala et al. (2023); Liu and Shaliastovich (2022); Pástor and Veronesi (2012, 2013).

[2] See, e.g., Adrian et al. (2024); IMF (2024); U.S. Government Accountability Office (2024).

[3] ICRG embeds multiple dimensions of political risk and is the most common gauge of political risk in the literature; see, e.g., Erb et al. 1996; Herrera et al. 2020

down ratings by one standard deviation over one-year intervals from 1999 to 2021, and Italy had seven such down ratings. The ratings are also subject to crashes, such as an almost two-standard-deviation drop in the UK around Brexit and a three-standard-deviation drop in France from the 2024 snap elections. Subsample analysis uncovers significant sensitivities of yield and growth to changes in the political ratings for developed countries. The large ICRG rating swings then raise the question of whether political risk can impact the debt sustainability of developed economies.

We develop a DSA model with yield and growth political channels to provide answers. Yields determine the cost of debt financing (numerator effect), and growth lowers the debt-to-GDP ratio (denominator effect). We augment the discrete-time and state-space *scenario tree* of Zenios et al. (2021) with a political rating variable, which we calibrate to complement the financial, economic, and fiscal variables. Political risk is introduced in DSA through estimated political sensitivities of bond yields and growth. From the model, we obtain state-dependent debt stock and flow dynamics, without and with political risk, and optimize the maturity of bond issuance to finance the debt at minimum expected cost with sustainability conditions.

The model allows us to evaluate debt sustainability under optimal debt financing strategies, and by optimizing a tail risk measure, we draw conclusions with a high confidence level. These two features are salient for our study and the model aligns with the best practices of public debt management offices;[4] they are unique to our political DSA model and Zenios et al. (2021). Debt is considered sustainable when the stock is on a non-increasing trajectory in the long run with a high probability (Blanchard, 2022), and the flow (refinancing needs) is below a threshold that markets can finance (Bouabdallah et al., 2017, p. 29). The model reveals that the political impact on debt comes from both the level and uncertainty of political ratings, so political risk is not only relevant during crashes. Introducing political risk into DSA is our modeling contribution, and we demonstrate cases where traditional DSA incorrectly predicts sustainability.

On the empirical side, we estimate the sensitivity of sovereign debt fundamentals to a country-level proxy of political risk, document political risk in developed countries going beyond emerging markets, and link structural reforms to lower political risk. We consider the impact of political risk on the expected values of debt fundamentals, the most prominent of which are economic growth and government spending. We also consider the effect on the volatility of the fundamentals, which increases the risk premia. Another potential mechanism is through higher-moment effects, such as crashes or the willingness to pay, as opposed to the ability to pay determined by economic fundamentals (Eaton and Gersovitz, 1981), that further increase risk premia. Although the debt financing interest rate is the aggregate of these risk premium effects, we carry out a test to disentangle them and better understand the mechanisms.

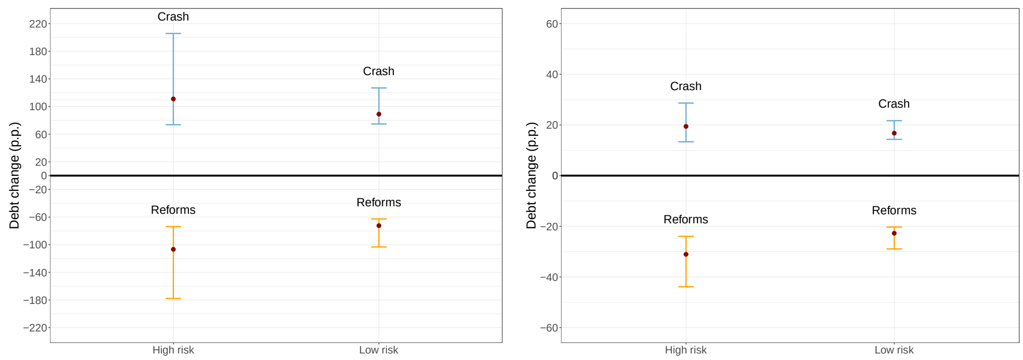
We run panel regressions of excess bond yields, GDP growth, and primary balance on the ICRG ratings with macroeconomic, governmental, and external controls. The regressions document economically and statistically significant coefficients for yields and growth, but not primary balance, on the political ratings, i.e., *political sensitivities*. Subsample analysis shows that the political sensitivities are significant for high- and low-political risk, high- and low-debt, and emerging and developed countries. (The primary balance coefficient is insignificant in all subgroups except emerging markets.) A ten-point drop in political ratings (out of 100) results in higher bond yields by 106 basis points (bp) and lower GDP growth by two percentage points (pp). We find that the political risk impact on yields goes beyond the effect of expected value and volatility of macroeconomic aggregates. This is a new result in the literature. Further empirical tests ask what may lead to improved political ratings and uncover a positive predictive relation from an IMF index of structural reforms (Alesina et al., 2020) to political ratings.

[4]See the professional guidance 5250 by the International Organisation of Supreme Audit Institutions (2020). For instance, the US, Dutch, Finnish, and Italian treasury goals are to finance government borrowing “at the lowest cost against acceptable risks”.

Figure 1 – Long-term debt level effect of reforms or a crash

This figure displays changes in the interquartile range and the mean values of debt-to-GDP ratios for (a) high-debt and (b) low-debt countries due to reforms (negative) or a political rating crash (positive). Results are from the tests of subsection 4.3.3 for high and low political risk countries at the end of a 30-year horizon.

(a) High debt **(b)** Low debt



We put the model to work on representative eurozone countries in five steps: (i) Document the effect of political risk on the tradeoff between the cost of debt financing and refinancing risk; (ii) Assess the debt sustainability effects of political risk and uncover the mechanisms; (iii) Assess the effects of reforms or crashes on debt sustainability; (iv) Benchmark the effects of reforms against the pandemic quantitative easing program of the European Central Bank and estimate the cost for reforms to be effective, also documenting a cost from delays; (v) Evaluate the marginal effects of the yields and growth channels. We also successfully ran a battery of robustness tests. As an extension, we use the model to study the effects of political risk on sovereign debt management.

Several observations follow from the tests. First, political risk shifts the cost-risk tradeoff towards higher expected cost and refinancing risk; the cost increase is about 1.5% of GDP for high-debt, high-risk countries and 0.5% GDP for low-risk countries. Second, political risk can expose seemingly sustainable debt dynamics as unsustainable. Third, structural reforms can significantly lower debt ratios, as shown in Figure 1, while the opposite is true for political rating crashes. Reforms can restore debt sustainability, decreasing debt trajectories equivalent to an extra fiscal effort of 1.75% of GDP per annum. This impact compares favorably against a benchmark of lowered debt ratios from the ECB's pandemic quantitative easing program. Finally, we find political risk effects on optimal debt financing maturities. Our findings are likely more substantial for other countries, given that eurozone countries have relatively low political risk and bond yields.

We corroborate the model predictions with two case studies of the reforms in Italy from 2014 to 2019 and the ratings crash in France after the snap 2024 elections. The political DSA model would have more closely tracked the Italian debt trajectories than the traditional DSA and reveals sustainability risks for France's debt which the conventional analysis misses.

Our findings have policy implications for international institutions, public debt management offices, and the EU's new fiscal framework: (i) Political risk can adversely affect debt sustainability in developed and not only emerging markets; (ii) Reforms can lower political risk and restore debt sustainability of high-debt countries; (iii) The optimal choice of debt financing maturities should take into account political risk.

1.1 Related literature

The electoral cycle has been documented as a significant determinant of sovereign debt defaults by Manasse and Roubini (2009). We go beyond defaults, which are rare events, and the slow-moving electoral cycle to model debt (un)sustainability in an optimal debt financing setting, considering the numerator (bond yields) and denominator (economic growth) channels using a granular political risk proxy.

Political effects have been studied using government stability as a proxy for political risk and found to foster growth (Alesina et al., 1996; Barro, 1991), foreign direct investments (Alesina and Perotti, 1996), and the financial markets (Belo et al., 2013). Political stability was proxied by slow-moving variables such as cabinet changes (Aisen and Veiga, 2013), transfer of executive power (Alesina et al., 1996), or political assassinations and property rights violations (Alesina and Perotti, 1996). These proxies do not capture changes in political risk that build up before a power transfer event, whether peaceful or violent. They focus on political stability, whereas political risk is multi-faceted (Kobrin, 1982; Sottilotta, 2016). We use the monthly ICRG composite political rating, which embeds twelve dimensions of political risk —government stability, socioeconomic conditions, investment profile, internal and external conflict, corruption, military in politics, religious and ethnic tensions, law and order, democratic accountability, or bureaucracy quality. It was shown to predict political risk realizations (Bekaert et al., 2014b) and tracks a large cross-section of countries over a long time series up to the present. In contrast, political stability measures stop earlier (e.g., 2004 in Aisen and Veiga (2013)) and are less relevant for developed countries. We also uncover a new predictive relation between structural reforms (Alesina et al., 2020) and the ICRG ratings.

Earlier related literature focused on emerging (Bekaert et al., 2014a; Block and Vaaler, 2004; Eichler, 2014) or mixed samples of emerging and developed countries (Aisen and Veiga, 2013; Alesina et al., 1996; Barro, 1991). It proxied political risk through extreme event indicators such as (non)peaceful transfer of power (Aisen and Veiga, 2013; Alesina et al., 1996; Alesina and Perotti, 1996). We contribute the finding of economically and statistically significant political sensitivities of yields and growth for developed countries and using a granular political rating variable instead of slow-moving political cycles or violent political events.

Our empirical work is close to Bekaert et al. (2014a), who documented a political risk premium on sovereign bond yields for emerging markets, but we differ in several ways. They look at country ICRG deviations from US ratings to estimate bond spreads over the US government bond yields, whereas we use each country's rating to explain country yields; using their approach, a country's yields would not change if its rating moves in tandem with the US due to spillovers. We also consider growth and developed markets.

Our model follows the DSA tradition of international institutions; see Bouabdallah et al. (2017) for ECB, European Commission (2020), IMF (2022), Zenios et al. (2021) for ESM, Alberola et al. (2022) for BIS. None of these link political risk to debt dynamics, although the significance of political risk to sovereign debt is recognized in the increasing use of the words "politics," "political uncertainty," or "geopolitical risk" in the IMF Annual Report, ECB Financial Stability Report, and European Commission Fiscal Monitor, from less than five in 2015 to 45 recently. Our model fills the gap by incorporating the channels from political risk to sovereign debt. Two features of the model, absent in earlier literature, carried over from Zenios et al. (2021), are the optimization of debt financing and a risk measure; they allow us to draw conclusions with high confidence in an optimal debt financing setting without or with political risk. Our work adds the sovereign debt dimension to optimization modeling for portfolio political risk (Lotfi et al., 2025; Smimou, 2014).

We finally contribute to the literature on reforms and economic performance. We uncover improved political ratings using the IMF structural reforms database (Alesina et al., 2020), quantify the impact of structural reforms in improving political ratings within debt analysis, evaluate the long-term benefits to debt sustainability against the short-term reforms cost, and document a cost of reform delays.

2 Political risk effects on debt fundamentals

We estimate the political risk impact on the expected values of debt fundamentals and their volatility, which can raise bond risk premia. We also consider potential effects beyond those due to the expected value and volatility of debt determinants that could be rationalized through higher-moment effects like crashes or the sovereign's willingness to pay (Eaton and Gersovitz, 1981), as opposed to the ability to pay reflected in the distribution of the fundamentals.

What matters for DSA are the growth and primary balance effects and the aggregate effect on yield spreads. Hence, we regress spreads and real GDP growth on a set of controls that include economic and external factors from the literature (Afonso et al., 2012; Delatte et al., 2017; Pan and Singleton, 2008), together with country and time fixed effects. For fiscal balance, although there is some evidence of political cycle effects on deficit financing for municipalities (Bohn and Veiga, 2019), a regression of primary balance on ICRG does not find statistically significant results when controlling for the debt level for any country sub-sample except for emerging markets and is relegated to an appendix.[5]

While we control for an extensive set of macroeconomic and financial variables, we also use time and country fixed effects variables to address a potential problem of omitted variables common in cross-country studies (Brogaard et al., 2020). Further analysis for several country sub-samples does not find significant cross-sample variation, alleviating potential concerns about cross-country fixed effects. We also include the volatility of the control variables as a robustness test. The ICRG coefficient remains economically and statistically significant, prompting further investigation beyond the expected value and volatility effects. We orthogonalize ICRG to the volatilities, and using the residuals as a regressor, we rule out that ICRG is picking up macro volatility.

We first estimate the political risk effects on the aggregate bond excess yields and growth. In further tests, we extract the impact of the residual ICRG on yields for completeness.

2.1 Bond yield spreads

We follow Bekaert et al. (2014a) and run a panel regression of bond yield spreads on the ICRG ratings to estimate the spreads' political sensitivity, β_{PS},

$$\text{Spread}_{t,j} = \alpha + \beta_{PS}\,\text{ICRG}_{t,j} + \Theta X_{\,t,j} + \gamma_t + \delta_j + \epsilon_{t,j}. \quad (1)$$

X_t is a matrix of control variables, with regression coefficients Θ, from Afonso et al. (2012); Delatte et al. (2017), i.e., real GDP growth and inflation for macroeconomic controls, primary balance and nominal debt-to-GDP for government controls, current account balance as external controls, and VIX to proxy risk appetite (Pan and Singleton, 2008). γ_t and δ_j capture time and country fixed effects. They control for country variations that may be correlated with the political ratings and other control variables due to local socio-economic factors or for unobserved time-varying heterogeneity (Brogaard et al., 2020). The average of the fixed effect variables within a country controls for time-invariant heterogeneity; their average across countries controls for common shocks.

We run the regression on a sample of 46 countries spanning 1999-2021 and on several subsamples.[6]

[5]The model assesses debt sustainability for an exogenously given fiscal stance, in line with the cited literature. For all country groups except emerging markets, we find non-significant political risk effects on primary balance. Emerging markets are beyond the scope of our paper, although the DSA model can be easily extended to incorporate political effects on the primary balance as estimated in Appendix Table C.1, column "EM".

[6]The developed countries are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong

We obtain all data from Datastream, except for the debt-to-GDP ratio which is from the IMF. The ICRG ratings, inflation, primary balance, current account, and VIX are available monthly, GDP growth quarterly, and debt-to-GDP annually. Spreads are over the one-month Euribor for eurozone countries and the US one-month T-bill rate for the rest.[7]

Summary statistics for the ICRG variable are given in Appendix Table A.1 for the entire country sample and A.2 for the temporal and cross-country ICRG variability per subsample. The ratings exhibit significant variability in the range 0-100. Country temporal standard deviations range from 1.49 to 6.44, with an average of 3.33, and cross-country standard deviations average 10.73. The ratings are non-Gaussian, with skewness from -1.72 to -1.18 and excess kurtosis from -1.60 to -6.90. They also experience crashes: over a window of up to five years, 5% of the downratings were by at least 9.5 points and 1% by at least 14.

For subsample analysis, we consider high- or low-risk, high- or low-debt, and developed or emerging economies. Countries with ratings below the recent post-2008 median value of 77 are classified as high risk, and those above as low risk, with respective mean ratings of 67 and 84. High-risk countries have a 5% probability of experiencing a large ICRG downrating of 10.5 points and a 1% probability of a downrating by 16 points over a window of up to five years. For low-risk countries, the corresponding downratings are 9.5 and 12 points. There are also large upratings at the 5% and 1% levels of 11 and 19 for high-risk and 8 and 11 for low-risk countries. High-debt countries are those with average temporal debt ratios above the median of 48% of GDP, with low-debt countries below and respective means of 85% and 35%. For emerging and developed markets, we follow the MSCI classification, with respective average debt ratios of 42% and 68%, and average ICRG ratings of 67 and 83 (Table A.1).

We run the regression on monthly data, keeping the quarterly and annual data constant in the interim, and report the results in Table 1. The political sensitivities are economically and statistically significant in all country groups; the coefficients are negative as higher political ratings imply lower risk, reducing the spread. We reach an R^2 of 0.43 on the entire sample, with the lowest R^2 of 0.22 in low-risk countries. High-debt countries have the largest sensitivity (-1.120), and low-risk countries have the smallest (-0.859). The coefficients are large and statistically significant in developed (-0.800) and emerging (-0.944) markets. Developed countries have, on average, higher political ratings, but their bond yields political sensitivities that are only slightly smaller than those of emerging markets. This has a policy implication that political risk is not only relevant for emerging markets.

A ten-point deterioration of the ICRG ratings leads to a full-sample average annual increase in bond yields by 106 bp, establishing political risk as a determinant of debt dynamics through the yields channel. The impact is more substantial for the high-debt (10 bp larger than the low-debt) and high-risk (13 bp larger than the low-risk) subsamples.

2.2 Growth

We estimate the growth political sensitivity, β_{PG}, through the panel regression

$$\Delta \text{GDP}_{t,j} = \alpha + \beta_{PG}\, \text{ICRG}_{t,j} + \Theta X_{\ t,j} + \gamma_t + \delta_j + \epsilon_{t,j}, \tag{2}$$

Kong, Ireland, Israel, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, UK, and the USA, and the emerging are Brazil, Chile, China, Colombia, Czechia, Egypt, Greece, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Peru, Philippines, Poland, Qatar, Russia, Saudi Arabia, South Africa, Taiwan, Thailand, and Turkey. The classification is from MSCI 2021Q4.

[7]Obtained from Kenneth French's website at `http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html#Developed`

Table 1 – Political risk and bond yields

This table reports the results of a panel regression of excess bond yields on the ICRG political ratings and a set of control variables. Column "All" is for all countries. The other columns report results on subsamples for different country classifications: high vs. low debt-to-GDP (HD, LD), high vs. low political risk (HR, LR), and emerging vs. developed markets (EM, DM). Yields are expressed in excess of the risk-free rate, proxied by the one-month Euribor for eurozone countries and the US one-month T-bill rate for all other countries. Debt is denominated in local currency and scaled by GDP. Real GDP and inflation are expressed in growth rates. The primary balance is denominated in billions of USD, and the current account is a percentage of GDP. The original coefficients are rescaled: political risk and primary balance by 10^3, debt-to-GDP by 10^4, and VIX by 10^5. All regressions include country and time-fixed effects. Standard errors are robust and clustered at the country level. The asterisks (***), (**), and (*) denote statistical significance at the 1%, 5% and 10% level, respectively. The sample spans 46 countries with monthly observations from 1999 to 2021.

	All	HD	LD	HR	LR	EM	DM
Political risk	-1.057***	-1.120***	-1.020***	-0.993***	-0.859*	-0.944**	-0.800**
	(0.000)	(0.006)	(0.005)	(0.002)	(0.056)	(0.016)	(0.030)
Debt-to-GDP	1.304	0.813	0.868	0.104	2.018***	0.135	1.880***
	(0.125)	(0.533)	(0.483)	(0.950)	(0.016)	(0.963)	(0.006)
GDP growth	-0.100***	-0.072***	-0.133*	-0.090*	-0.083***	-0.122**	-0.039**
	(0.005)	(0.013)	(0.057)	(0.079)	(0.011)	(0.052)	(0.041)
Inflation	0.335*	0.424*	0.298	0.346	0.290*	0.350	0.056
	(0.097)	(0.062)	(0.211)	(0.178)	(0.072)	(0.177)	(0.526)
Primary balance	-0.476	0.267	-2.878*	-1.935	0.663	-3.084	0.762
	(0.571)	(0.640)	(0.092)	(0.174)	(0.264)	(0.216)	(0.146)
Current account	-0.035*	-0.044	-0.029	-0.055	-0.021	-0.097**	-0.007
	(0.077)	(0.112)	(0.355)	(0.159)	(0.153)	(0.024)	(0.530)
VIX	-0.770	-2.270	1.360	12.070	-9.670**	18.580***	-15.450***
	(0.863)	(0.740)	(0.823)	(0.112)	(0.048)	(0.015)	(0.000)
R^2	0.426	0.465	0.540	0.416	0.222	0.457	0.155
Nr. observations	9,546	5,006	4,540	4,135	5,411	4,040	5,506

where $\Delta\text{GDP}_{t,j}$ is the growth rate of nominal national output.[8] As in (1), we use time and country fixed effects and the matrix of control variables Θ, excluding GDP growth.

We run this regression with the quarterly frequency of GDP data and report the results in Table 2. The coefficients are positive as higher political ratings imply lower risk and increasing growth. The entire sample shows that a ten-point deterioration of the political rating leads to an economically large and statistically significant average reduction in nominal GDP growth by 2 pp. The political sensitivities are significant for high-debt, low-risk, and developed countries. For high-risk and emerging markets, the coefficients are positive but not statistically significant; we surmise that this is due to the high growth rate and volatility of emerging high-risk countries during our sample period, with the available quarterly data probably lacking sufficient power for the statistical test.

[8] We estimate the political risk effects on nominal GDP growth, as debt sustainability analysis is in nominal values. The estimates are robust when using real GDP growth and are available from the authors.

Table 2 – Political risk and GDP growth

This table reports the results of a panel regression of nominal GDP growth on the ICRG political ratings and a set of control variables. Column "All" is for all countries. The other columns report results on subsamples for different country classifications: high vs. low debt-to-GDP (HD, LD), high vs. low political risk (HR, LR), and emerging vs. developed markets (EM, DM). Debt is denominated in local currency and scaled by GDP. Inflation is in growth rates. The primary balance is denominated in billions of USD, and the current account is a percentage of GDP. The original coefficients are rescaled: political risk and primary balance by 10^3, debt-to-GDP by 10^4, and VIX by 10^5. All regressions include country and time-fixed effects. Standard errors are robust and clustered at the country level. The asterisks (***), (**), and (*) denote statistical significance at the 1%, 5% and 10% level, respectively. The sample spans 46 countries with monthly observations from 1999 to 2021.

	All	HD	LD	HR	LR	EM	DM
Political risk	0.480***	0.780***	-0.043	0.335	0.434***	0.280	0.552***
	(0.009)	(0.000)	(0.869)	(0.268)	(0.010)	(0.373)	(0.005)
Debt-to-GDP	-0.388	0.228	-2.138***	-0.949	-0.092	-2.077*	-0.183
	(0.265)	(0.493)	(0.003)	(0.243)	(0.685)	(0.084)	(0.294)
Inflation	1.452***	1.982***	1.261**	1.449**	1.417***	1.465**	1.318***
	(0.006)	(0.000)	(0.048)	(0.031)	(0.000)	(0.024)	(0.000)
Primary balance	8.638***	8.453***	7.938***	15.158*	7.296***	10.144*	8.191***
	(0.000	(0.000)	(0.010)	(0.091)	(0.000)	(0.090)	(0.000)
Current account	0.045***	0.020*	0.090**	0.060**	0.036*	0.063**	0.032*
	(0.008)	(0.085)	(0.016)	(0.050)	(0.076)	(0.040)	(0.096)
VIX	-1.060***	-1.086***	-0.979***	-1.420***	-0.768***	-1.348***	-0.844***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R^2	0.079	0.068	0.111	0.153	0.128	0.139	0.126
Observations	3,347	1,743	1,604	1,531	1,816	1,500	1,847

2.3 Further tests

We run the spread regression, adding controls for the volatilities of the macroeconomic aggregates. The ICRG ratings remain economically and statistically significant; see Appendix Table C.2. Hence, we proceed to disentangle the volatility effect from any residual effect of political risk that can be attributed to factors such as higher-order moments, e.g., due to crashes or willingness to pay. We first run a panel regression of excess bond yields on the inflation rate and the macro-volatility variables (see Table 3, Panel A) and save the fitted values and the residuals. We then run a second-pass panel regression of the fitted values and residual spreads on the ICRG ratings and the levels of the macro variables of the first-pass estimation (see Table 3, Panel B). We observe that the ICRG variable is not significant in explaining the fitted values (Panel B1), but it remains economically and statistically significant in explaining the residuals (Panel B2). Hence, ICRG affects excess bond yields beyond what can be explained through macro-volatilities.

Table 3 – Transmission channels from political risk to bond yields

This table reports the results of a two-pass estimation of the transmission channels from political risk to bond yields. Panel A reports a first-pass panel regression of excess bond yields on the inflation rate and a set of variables that capture the volatility of macroeconomic aggregates. We save the fitted values and the residuals from this regression. Panel B reports the results of the second-pass estimation of the impact of political risk on the fitted values (Panel B1) and residuals (Panel B2) estimated in Panel A. Specifically, we run a panel regression of, respectively, the fitted and residuals yields on the ICRG political risk ratings and the first moments of the macroeconomic variables employed in the first-pass estimation. In both panels, column "All" is for all countries. The other columns report results on subsamples for different country classifications: high vs. low debt-to-GDP (HD, LD), high vs. low political risk (HR, LR), and emerging vs. developed markets (EM, DM). Yields are expressed in excess of the risk-free rate, proxied by the one-month Euribor for eurozone countries and the US one-month T-bill rate for all other countries. Debt is denominated in local currency and scaled by GDP. Real GDP and inflation are expressed in growth rates. The primary balance is denominated in billions of USD, and the current account is a percentage of GDP. The series of the volatilities of the macroeconomic variables, denoted by "VOL", have been constructed as the squared residuals from AR(1) processes fitted on each of the macroeconomic variables. All monthly variables have been converted to quarterly frequency before fitting AR(1) processes on quarterly data for consistency with variables available at quarterly frequency. Debt-to-GDP, available annually, has been kept at the same frequency to construct its volatility series, and the latter has been converted to quarterly frequency by repeating the same values for all months in the same quarter. The original coefficients are rescaled as follows. In Panel A, the coefficient for the volatility of the current account is multiplied by 10^2, for the volatility of primary balance by 10^4, and VIX, volatility of debt-to-GDP, and volatility of VIX by 10^5. In Panel B, the political risk and primary balance coefficients are multiplied by 10^3, for debt-to-GDP by 10^4, and for VIX by 10^5. All regressions include country and time fixed effects. Standard errors are robust and clustered at the country level. The asterisks (***), (**), and (*) denote statistical significance at the 1%, 5% and 10% level, respectively. The sample spans 46 countries with quarterly observations from 1999 to 2021.

(a) First-pass regression

	ALL	HD	LD	HR	LR	EM	DM
Inflation	0.923***	0.909	0.902***	1.043***	0.424	1.031***	-0.066
	(0.001)	(0.105)	(0.010)	(0.004)	(0.162)	(0.003)	(0.750)
VIX	2.620	2.860	2.070	16.310*	-9.930	23.650**	-18.690***
	(0.673)	(0.812)	(0.762)	(0.092)	(0.209)	(0.025)	(0.001)
Debt VOL	2.560**	2.910**	-2.710	1.360	3.000**	-2.670	3.130**
	(0.025)	(0.013)	(0.500)	(0.405)	(0.030)	(0.241)	(0.018)
GDP growth VOL	0.159	0.003	0.335	0.347**	-0.183	0.423**	-0.194
	(0.305)	(0.989)	(0.115)	(0.032)	(0.332)	(0.024)	(0.251)
Inflation VOL	9.908***	-6.174	9.729***	10.141***	49.772	10.469***	90.932**
	(0.004)	(0.914)	(0.010)	(0.001)	(0.230)	(0.001)	(0.045)
Primary balance VOL	0.248	-0.314	181.239***	130.844***	-0.082	151.011***	-1.134
	(0.872)	(0.802)	(0.000)	(0.000)	(0.956)	(0.000)	(0.374)
Current account VOL	4.040**	2.283	34.612	27.055	6.591**	22.005	3.872*
	(0.047)	(0.401)	(0.503)	(0.844)	(0.015)	(0.830)	(0.062)
VIX VOL	0.597***	0.523	0.710**	0.788**	0.274	0.847**	-0.044
	(0.007)	(0.117)	(0.024)	(0.031)	(0.223)	(0.021)	(0.800)
R^2	0.196	0.206	0.196	0.227	0.341	0.235	0.370
Nr observations	3,103	1,623	1,480	1,356	1,747	1,328	1,775

(continued)

(b1) Second-pass regression: fitted yields

	ALL	HD	LD	HR	LR	EM	DM
Political risk	-0.045	-0.051	-0.006	-0.091	0.007	-0.085	0.019
	(0.399)	(0.363)	(0.931)	(0.317)	(0.887)	(0.317)	(0.655)
Debt-to-GDP	0.250**	0.371***	-0.180	-0.070	0.436***	-0.455	0.447***
	(0.054)	(0.006)	(0.350)	(0.804)	(0.005)	(0.102)	(0.001)
GDP growth	0.018**	0.011	0.026	0.020	0.013**	0.023*	0.008
	(0.040)	(0.110)	(0.117)	(0.142)	(0.037)	(0.097)	(0.177)
Primary balance	-0.666**	-0.526**	-0.075	-0.224	-0.583**	-0.304	-0.529**
	(0.025)	(0.025)	(0.782)	(0.773)	(0.015)	(0.516)	(0.019)
Current account	-0.008**	-0.008*	-0.007*	-0.008	-0.007**	-0.010	-0.007**
	(0.012)	(0.057)	(0.055)	(0.362)	(0.022)	(0.178)	(0.025)
R^2	0.899	0.908	0.891	0.865	0.926	0.838	0.926
Nr observations	3,243	1,690	1,553	1,489	1,754	1,461	1,782

(b2) Second-pass regression: residual yields

	ALL	HD	LD	HR	LR	EM	DM
Political risk	-1.152***	-1.232***	-1.027***	-1.002***	-1.047**	-1.005**	-0.923**
	(0.001)	(0.007)	(0.009)	(0.005)	(0.047)	(0.022)	(0.034)
Debt-to-GDP	0.936	0.159	0.896	-0.347	1.645*	-0.223	1.543**
	(0.289)	(0.900)	(0.501)	(0.833)	(0.053)	(0.939)	(0.028)
GDP growth	-0.023**	-0.032**	-0.011	-0.012	-0.025**	-0.023	-0.015
	(0.014)	(0.021)	(0.236)	(0.246)	(0.023)	(0.111)	(0.125)
Primary balance	-0.326	1.083	-11.531*	-7.156	2.084*	-11.615	2.126**
	(0.874)	(0.273)	(0.057)	(0.104)	(0.054)	(0.149)	(0.043)
Current account	-0.031	-0.036	-0.025	-0.051	-0.014	-0.090**	-0.003
	(0.101)	(0.175)	(0.373)	(0.175)	(0.289)	(0.028)	(0.779)
R^2	0.405	0.454	0.511	0.394	0.028	0.393	0.007
Nr observations	3,103	1,623	1,480	1,356	1,747	1,328	1,775

We also run the main regressions for the recent period starting with the Great Financial Crisis of 2008; see Tables 4. The political effects on spreads and growth are robust to the choice of calibration period, with higher political sensitivity coefficients during the recent period. The deterioration of political ratings by ten points has led to a full-sample average increase of yields by 171 bp and a reduction of growth by 3 pp.

Table 4 – Political risk, bond yields, and growth 2008–2021

This table reports the results of a panel regression of excess bond yields (Panel A) and growth (Panel B) on the ICRG political ratings and a set of control variables over the period 2008–2021. Column "All" is for all countries. The other columns report results on subsamples for different country classifications: high vs. low debt-to-GDP (HD, LD), high vs. low political risk (HR, LR), and emerging vs. developed markets (EM, DM). Yields are expressed in excess of the risk-free rate, proxied by the one-month Euribor for eurozone countries and the US one-month T-bill rate for all the other countries. Debt is denominated in local currency and scaled by GDP. Real GDP and inflation are expressed in growth rates. The primary balance is denominated in billions of USD, and the current account is a percentage of GDP. The original coefficients are rescaled: political risk and primary balance by 10^3, debt-to-GDP by 10^4, and VIX by 10^5. All regressions include country and time-fixed effects. Standard errors are robust and clustered at the country level. The asterisks (***), (**), and (*) denote statistical significance at the 1%, 5% and 10% level, respectively. The sample spans 46 countries with monthly observations.

(a) Bond yields

	All	HD	LD	HR	LR	EM	DM
Political risk	-1.707***	-2.115***	-1.282***	-1.856***	-1.503**	-2.234***	-1.284***
	(0.000)	(0.000)	(0.005)	(0.000)	(0.031)	(0.001)	(0.015)
Debt-to-GDP	1.877**	1.521	0.644	-0.275	2.404**	-0.452	2.042**
	(0.050)	(0.215)	(0.724)	(0.869)	(0.025)	(0.886)	(0.018)
GDP growth	-0.084***	-0.058***	-0.107*	-0.076*	-0.080***	-0.109**	-0.052***
	(0.006)	(0.008)	(0.077)	(0.081)	(0.002)	(0.049)	(0.006)
Inflation	0.298	0.248	0.291	0.302	0.251*	0.275	0.168
	(0.165)	(0.185)	(0.259)	(0.227)	(0.085)	(0.260)	(0.166)
Primary balance	0.286	0.727	-1.570	-0.707	0.992**	-1.152	0.837**
	(0.519)	(0.147)	(0.201)	(0.343)	(0.052)	(0.332)	(0.039)
Current account	-0.012	-0.022	-0.007	0.026	-0.023*	-0.029	-0.010
	(0.535)	(0.168)	(0.883)	(0.651)	(0.080)	(0.615)	(0.383)
VIX	-0.348	-2.980	1.970	9.620	-8.550*	15.680**	-13.610***
	(0.941)	(0.621)	(0.764)	(0.184)	(0.098)	(0.033)	(0.000)
R^2	0.465	0.503	0.574	0.431	0.201	0.484	0.170
Observations	6,812	3,553	3,259	3,137	3,675	3,071	3,741

(b) Growth

	All	HD	LD	HR	LR	EM	DM
Political risk	0.763***	1.167***	0.047	0.522	0.853***	0.589	0.755***
	(0.004)	(0.001)	(0.895)	(0.248)	(0.000)	(0.265)	(0.002)
Debt-to-GDP	-0.415	0.563	-2.627***	0.580	-0.536	-0.946	-0.252
	(0.370)	(0.284)	(0.003)	(0.661)	(0.214)	(0.595)	(0.546)
Inflation	1.254**	1.987***	1.071*	1.264*	1.070**	1.299**	0.889*
	(0.027)	(0.000)	(0.085)	(0.063)	(0.024)	(0.052)	(0.101)
Primary balance	10.381***	9.708***	7.919***	16.698*	8.795***	11.011*	9.987***
	(0.000)	(0.000)	(0.004)	(0.099)	(0.000)	(0.070)	(0.000)
Current account	0.048*	0.015	0.102**	0.067*	0.037	0.086**	0.028
	(0.056)	(0.310)	(0.043)	(0.087)	(0.198)	(0.053)	(0.273)
VIX	-1.200***	-1.154***	-1.152***	-1.620***	-0.870***	-1.503***	-1.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R^2	0.040	0.034	0.075	0.071	0.103	0.082	0.108
Observations	2,325	1,226	1,099	1,098	1,227	1,076	1,249

3 Debt sustainability analysis with political risk

We now develop the DSA model with political risk. We start from the model of Zenios et al. (2021) with scenario trees for interest rates, growth, and fiscal balance to add political ratings as state variables to obtain stochastic debt dynamics with a tail risk measure. We then formulate the optimal debt financing model with sustainability constraints.

3.1 Model setup

We consider a sovereign with nominal economic output Y_t at t, holding debt stock D_{t-1} with legacy debt D_0, and running a primary balance PB_t. The sovereign's *gross financing needs* are given by the *flow* variable

$$GFN_t = i_{t-1}D_{t-1} + A_t - PB_t, \tag{3}$$

where i_{t-1} is the *effective nominal interest rate* on debt, and A_t denotes the amortization of debt stock D_{t-1}. The *debt stock* is given by

$$D_t = (1 + i_{t-1})D_{t-1} - PB_t. \tag{4}$$

At each t, the sovereign makes *financing decisions* denoted by $X_t(j)$ for the nominal amount of debt issued with maturity index $j = 1, 2, \ldots, J$. The *debt financing equation* satisfies

$$\sum_{j=1}^{J} X_t(j) = GFN_t. \tag{5}$$

The nominal interest rate on issued debt is determined by the forward rates on AAA-rated sovereign bonds, taken as the risk-free rate (r_{ft}), plus a risk premium on the sovereign. In standard DSA, the risk premium depends on the debt level (Blanchard, 2022) as a function of the debt stock-to-GDP ratio, $d_t = D_t/Y_t$, with *term premia* for debt of different maturities. The interest rate for instrument j issued at t is

$$r_t(j) = r_{ft} + \rho(d_t, j), \tag{6}$$

where $\rho(d, j)$ denote premia for the jth instrument maturity given by

$$\rho(d, j) = a_j + \hat{\rho}(d). \tag{7}$$

a_j is the term premium, and $\hat{\rho}(d)$ is the risk premium as a function of debt stock, which we approximate using the piece-wise linear function with a lower bound zero for debt-to-GDP below d_{min} and increasing for higher debt, as calibrated for eurozone countries by Zenios et al. (2021).[9] A smooth approximation is

$$\hat{\rho}(d) \doteq \hat{\rho}_c \frac{d - d_{min}}{1 + \exp\left(d_{min} - d\right)}. \tag{8}$$

$r_t(j)$ determine the *effective interest rate* as a function of the debt financing decisions $X_t(j)$.

[9] We differ from the references in that we do not assume a cap on the increase, reached if a country loses market access and is financed by the official sector under strict conditionality. The cap is useful when deploying DSA in practice but introduces a non-linearity that can mask the political effects we study.

3.2 Scenario trees

A discrete-time and state-space scenario tree is used to add political ratings to the uncertainty relating to the risk-free interest rates, growth, and fiscal balance of the standard model. Let $t = 0, 1, 2, \ldots T$ denote time with a risk horizon T, and $n \in \mathcal{N}_t$ denote the *states* at t. The number of states at t is N_t, with a total number of states N, and $a(n)$ denotes the unique *ancestor* of state n. $\mathcal{P}(n)$ denotes the set of states on the unique *path* from the *root state* 0 to n, with $\tau(n)$ denoting the time of n. Each path leading to a terminal state $n \in \mathcal{N}_T$ is a *scenario* with probability $\text{Prob}^{(n)}$ given as the product of the conditional probabilities on the path. For each state n, all information at $m \in \mathcal{P}(n)$ is known since m precedes n. Data and variables are state-dependent, indexed by n.

To calibrate the scenario trees for stochastic optimization, we use moment matching following Consiglio et al. (2016). We solve a global optimization problem estimating the level of the state variables on the tree and the conditional probabilities at each state so that their mean values, standard deviations, and correlations match input data at each period. For the mean values of the risk-free forward rates state variables, we match the market expectations (from the yield curve of interest rates). We match economic forecasts for growth and fiscal stance state variables (from the IMF World Economic Outlook, WEO). For the political state variable, we match mean values for different regimes representing (i) a reversion to the mean, (ii) reforms, or (iii) crashes; see section 4.1. We also match the standard deviations and correlations estimated from historical data. The simultaneous estimation of levels and conditional probabilities generates trees that can match the moments with a relatively small number of scenarios. For the tree calibration see subsection 4.2.

3.3 Political risk-debt channels

Political risk enters the model through the political sensitivities of bond yields (numerator effect) and growth (denominator effect), determined by the state-dependent political rating changes on the scenario tree.

Using the spreads sensitivity (β_{PS}), we introduce the political risk premium for deviations of ICRG^n from its mean value $\overline{\text{ICRG}}$,

$$\rho_P(\text{ICRG}_t^n) = -\beta_{PS}(\text{ICRG}_t^n - \overline{\text{ICRG}}). \tag{9}$$

Deviations from the mean indicate higher uncertainty about the political rating and should carry a risk premium. Taking $\overline{\text{ICRG}}$ as the historical average, we calibrate $\hat{\rho}(d)$ and a_j to past data with the political premium added for deviations from the mean. From (6), we obtain the state-dependent interest rates with political risk as

$$r_t^n(j) = r_{ft}^n + \rho(d_t^n, j) + \rho_P(\text{ICRG}_t^n). \tag{10}$$

Similarly, we introduce the political sensitivity of growth. The state-dependent nominal GDP is given by $Y_t^n = Y_{t-1}^{a(n)}(1 + g_{t-1}^n)$ where g_{t-1}^n is the growth rate. Adjusting for political risk, we have

$$Y_t^n = Y_{t-1}^{a(n)} \left(1 + g_{t-1}^n + \beta_{PG}(\text{ICRG}_t^n - \overline{\text{ICRG}})\right). \tag{11}$$

3.4 Stochastic debt dynamics and the risk measure

Introducing state-dependent financing decisions, $X_t^n(j)$ we write (5) as

$$\sum_{j=1}^{J} X_t^n(j) = GFN_t^n, \tag{12}$$

for $n \in \mathcal{N}_t$, and $t = 0, 1, 2, \dots T$, where $GFN_t^n = i_{t-1}^{a(n)} D_{t-1}^{a(n)} + A_t^n - PB_t^n$, and $D_t^n = (1 + i_{t-1}^{a(n)}) D_{t-1}^{a(n)} - PB_t^n$ is the state-dependent stock equation (4). The interest rate also depends on the political state variable (10).

The state-dependent debt stock and flow ratios to GDP are given by $d_t^n = D_t^n / Y_t^n$ and $gfn_t^n = GFN_t^n / Y_t^n$. We use the distributions of these ratios to assess two sustainability conditions, whether (i) refinancing needs are likely to remain below a market threshold, and (ii) debt stock is likely to be on a non-increasing trajectory.

To quantify the likelihood of satisfying the two sustainability conditions, Zenios et al. (2021) introduced a tail risk measure of gross financing needs using *conditional-Value-at-Risk* (CVaR, Artzner et al. 1999). They defined the expected value of financing needs above the right α percentile as the value to be bounded to reduce refinancing risks with a high probability (e.g., 0.75 for a high confidence level). We let *gfn* denote the gross financing needs stochastic variable over all periods and define the CVaR function for flow by

$$\Psi(gfn) \doteq \mathbb{E}\left(gfn \mid gfn \geq gfn^{\diamond}\right). \tag{13}$$

$gfn^{\diamond}$ is the Value-at-Risk right α-percentile of the gross financing needs, i.e., the lowest value such that the probability of gross financing needs less than or equal to $gfn^{\diamond}$ is greater than or equal to α. $\Psi(gfn)$ measures the *refinancing risk*. Similarly, we can define the CVaR of debt stock.

3.5 Optimal financing with sustainability conditions

The DSA model determines debt financing that minimizes the expected *net interest payment* (NIP) subject to constraints on refinancing risk and debt stock.

Interest payments on state n of the tree consist of interest on legacy debt I_t^n plus interest on the debt created endogenously by the financing decisions. We exploit the tree structure to calculate the payments on a path leading to n. Let $CF_t^n(j, m)$ denote the nominal amount of interest payment at state n of period t, per unit of debt $X_{\tau(m)}^m(j)$ issued at state m of an earlier period $\tau(m)$ on path $\mathcal{P}(n)$. This amount is computed from scenarios of the term structure of interest rates, including premia (cf. eqn. 10) and the maturities of the issued debt. The state-dependent net interest payment, which the issuing sovereign controls through financing decisions, is given by

$$\mathrm{NIP}_t^n = I_t^n + \sum_{m \in \mathcal{P}(n)} \sum_{j=1}^{J} X_{\tau(m)}^m(j)\, CF_t^n(j, m). \tag{14}$$

The model minimizes the expected cost of debt subject to a refinancing risk constraint:

$$\underset{X}{\text{Minimize}} \quad \sum_{\substack{n \in \mathcal{N}_t, \\ t=0,1,2,\dots T.}} \mathrm{Prob}^{(n)}\, \mathrm{NIP}_t^n \tag{15}$$

$$\text{s.t.} \quad \Psi(gfn) \leq \omega. \tag{16}$$

Issuing debt at the lowest yield maturity lowers the financing cost but increases the refinancing risk when all debt must be refinanced together. Deviations from the minimum-cost maturity increase the cost of financing and, consequently, debt stock. The lowest-cost maturity depends on the slope and shape of the yield curve, but the tradeoff is pervasive. Varying the parameter ω, we trade off debt financing cost with refinancing risk. The increasing cost of debt pushes the debt stock dynamics upwards, and there is a tension between stock and flow, which can be controlled through a constraint

$$\frac{\partial d}{\partial t} \leq \delta. \tag{17}$$

If debt stock follows a non-increasing trajectory with $\delta \leq 0$ over our risk horizon with a high probability, then debt is sustainable. d takes scenario values d_t^n, and this constraint can also be implemented using the risk measure. A simpler implementation, which better demonstrates the effects of political risk on debt trajectories, is to find the minimum cost solution with ω below the market threshold and check ex-post if the debt stock dynamics are non-increasing with a high probability. This is the implementation we use.

To study the political risk effects on the debt financing strategy, we reformulate the model using proportional weights $w_t^n(j) \geq 0$ to write

$$w_t^n(j) = \frac{X_t^n(j)}{GFN_t^n}, \tag{18}$$

$$\sum_{j=1}^{J} w_t^n(j) = 1. \tag{19}$$

Three debt financing strategies follow from this formulation: (i) a *fixed-mixed strategy* with simple *rules* for all periods given by time-invariant $w(j)$; (ii) an *adaptive fixed-mix strategy* that adapts with time but is identical for all states at each period with time-dependent but state-invariant weight $w_t(j)$; (iii) a fully *dynamic strategy* with state-contingent weights $w_t^n(j)$. The dynamic strategy is the most efficient, but does not provide interpretable debt financing rules. An adaptive fixed mix can be described simply by the weighted average maturity of the issued debt, which affords some flexibility to the public debt management office. This is the default strategy in our tests.

We implement the model using GAMS on an AMD Ryzen 9 12-Core with 32 GB of memory, with solver BARON to fit the trees and CONOPT to solve the model.

4 Political risk effects on debt dynamics

We calibrate different political regimes and put the political DSA model to work in a $2 \times 2 \times 2$ controlled experiment on representative high- or low-risk and high- or low-debt countries in high or low bond yields environments (abbreviated as HR/LR, HD/LD, HY/LY).

4.1 Political regimes

We test three regimes of political risk ratings (i) deviating randomly around their mean value, (ii) improving gradually, and (iii) with sudden but transient crashes. Zero-mean deviations are the default and reflect uncertainty about the political rating; improved ratings can result from reforms that lower political risk as shown below; crashes arise from snap elections, military conflicts, terrorist attacks, pandemics, etc.

4.1.1 Zero-mean political rating changes

What is the scope of political DSA with mean-reverting ratings? In this case, the expected value of the spread and growth effects is zero, which may suggest that the debt trajectories do not change from political risk. Instead, we show that zero-mean deviations introduce a term linked to rating volatility in the cumulative debt stock expectations. This is a political rating uncertainty premium.

Without loss of generality, we simplify the debt dynamics as following the exponential

$$D_t = D_{t-1}\, e^{r_f + S(P,M)}, \tag{20}$$

where r_f is the risk-free rate and $S(P, M)$ is the total spread as a function of political risk P and all other credit factors M. We consider a linear function of spreads on P and M,

$$S(P, M) = \alpha P + \beta M, \tag{21}$$

with coefficient α and β. P and M are random variables with means μ_P and μ_M, variances σ_P^2 and σ_M^2, and covariance $\mathrm{Cov}(P, M)$. $S(P, M)$ is also a random variable, with mean $\mu_S = E[S(P, M)] = \alpha\mu_P + \beta\mu_M$ and variance $\sigma_S^2 = \mathrm{Var}(S(P, M)) = \alpha^2\sigma_P^2 + \beta^2\sigma_M^2 + 2\alpha\beta\,\mathrm{Cov}(P, M)$.

We omit for simplicity the dependence on the risk-free rate to focus on the spread and apply the result for the expectation of an exponential to obtain $E\left[e^{S(P,M)}\right] = e^{\mu_S + \frac{1}{2}\sigma_S^2}$. Substituting for μ_S and σ_S^2, we have

$$E\left[e^{S(P,M)}\right] = e^{\alpha\mu_P + \beta\mu_M + \frac{1}{2}(\alpha^2\sigma_P^2 + \beta^2\sigma_M^2 + 2\alpha\beta\mathrm{Cov}(P,M))}. \tag{22}$$

Hence, even if the expected value of the political spread is zero, $E[e^{S(P,M)}] > E[e^{\beta M}]$ due to the variance and covariance terms, assumed to be non-negative.

The economic interpretation of this result is that the political effects on debt also result from the uncertainty around the mean rating value, not only from unexpected rating changes due to reforms or crashes. We demonstrate this result when putting the model to work.

4.1.2 Reforms and political risk

The ICRG data show several gradual improvements over one- to five-year periods. The 5% (1%) right percentiles show improvements of 11 (19) points for high-risk and 8 (11) points for low-risk countries, corresponding to about three to six standard deviations, respectively. One way to see what may bring about such improvements is to test whether structural reforms lead to higher ICRG ratings. To this end, we use the IMF Structural Reforms Database index of advanced and developing economies (SRD, Alesina et al., 2020).

SRD rates the degree of regulatory liberalization from 0 (worst) to 1 (best) in domestic finance, external finance, labor market, product market, and trade policy areas. We use the aggregate SRD index, which rates country reforms by the average of the five indicators; see descriptive statistics in Table 5, Panel A.[10] We compute the correlations of ICRG with the SRD index for the 46 countries in our sample.[11] The cross-country average correlation is 0.30, with a median of 0.42. One-quarter of the countries have correlations above 0.55, but the bottom 25th percentile of the cross-sectional distribution of the within-country correlations takes mildly negative values. Thus, not all reforms are correlated with better political ratings, and the *gilet jaunes* unrest in France provides an anecdotal example. These observations align with the literature that reforms may be politically costly.

We run a contemporaneous regression of the levels of ICRG ratings on the SRD index

$$\mathrm{ICRG}_{t,j} = \alpha + \beta_{\mathrm{Ref}}\mathrm{SDR}_{t,j} + \gamma_t + \delta_j + \epsilon_{t,j}, \tag{23}$$

[10] `https://data.imf.org/?sk=8a361b05-ac3f-4cb2-be4a-f9a2b0cba124`, accessed July 2024.

[11] The ICRG ratings are monthly, and SRD is yearly, and we average the twelve ICRG ratings to obtain annual data; this can lower the correlations.

Table 5 – The impact of reforms on political ratings

This table reports (a) descriptive statistics of the IMF's structural reforms database (SRD) aggregate index and (b) results from panel regressions of the ICRG political ratings on the SRD index. In Panel A, we compute, for each country, the time-series average and standard deviation of the IMF index and report the cross-country statistics of these country-level averages, μ, and standard deviations, σ_T. We also compute, at each period, the cross-country standard deviation of the reform ratings and report the statistics of this time series of cross-sectional standard deviations (σ_C). Panel B reports the results of panel regressions of ICRG political ratings on the SRD index, both contemporaneous of levels and predictive with first differences of the reforms index forecasting changes in ICRG ratings. In column (1), we run pooled OLS regressions; in column (2), we control for country fixed effects; in column (3), we add year fixed effects. Standard errors are robust and clustered at the country level. The asterisks (***), (**), and (*) denote statistical significance at the 1%, 5% and 10% level, respectively. The sample spans the overlapping ICRG and SRD data of 46 countries from 1984 to 2014 using yearly observations.

(a) Descriptive statistics

	μ	σ_T	σ_C
Maximum	0.910	0.290	0.185
75th percentile	0.793	0.158	0.162
Mean	0.696	0.130	0.138
25th percentile	0.621	0.098	0.115
Minimum	0.292	0.041	0.091

(b) Panel regressions

	Contemporaneous of levels			Predictive of first differences		
	(1)	(2)	(3)	(1)	(2)	(3)
β_{Ref}	39.130***	17.473***	12.287*	14.048***	14.243***	9.871***
	(0.000)	(0.000)	(0.089)	(0.000)	(0.000)	(0.007)
R^2	0.327	0.327	0.254	0.014	0.014	0.153
Country FE	No	Yes	Yes	No	Yes	Yes
Year FE	No	No	Yes	No	No	Yes
Observations	1,309	1,309	1,309	1,226	1,226	1,226

and a predictive regression using first differences that reforms predict improved ratings,

$$\Delta\text{ICRG}_{t,j} = \alpha + \beta_{\text{Ref}}\Delta\text{SDR}_{t-1,j} + \gamma_{t-1} + \delta_j + \epsilon_{t-1,j}. \quad (24)$$

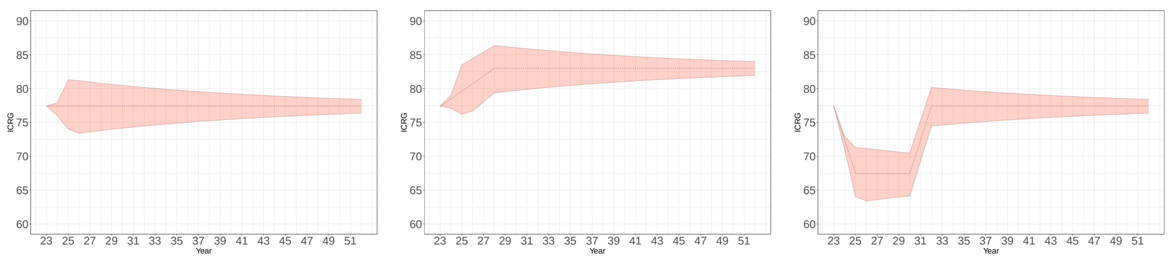
γ_t and δ_j denote time and country fixed effects variables to address a potential problem of omitted variables. We report the structural reform coefficients β_{Ref} and the regression statistics in Table 5, Panel B. In column (1), we run pooled OLS regressions; in column (2), we control for country fixed effects; and in column (3), we add year fixed effects. The coefficients on the SRD index are economically large and statistically significant in all specifications.

The results of the first regression allow us to proxy the slow-moving (annual) reforms index that stops in 2014 by the more recent and monthly updated ICRG ratings. The second regression rules out that our results arise spuriously due to persistence in the time series. Notably, it establishes a predictive relation between reforms and political ratings and can shed some light on how to alleviate potential reverse causality concerns. Specifically, running the opposite predictive regression of political rating changes on reform changes does not

Figure 2 – Political regimes: mean reversion, reforms, and crashes

This figure displays the fan charts of the ICRG political ratings for three regimes: (a) Political rating reverting to its long-term mean (dashed line), (b) reforms with improved political rating by one standard deviation over five years, and (c) a crash with a rating drop by three standard deviations and subsequent return to the mean. These fan charts are for a high-political-risk country.

(a) Mean reversion **(b)** Reforms **(c)** Crash



yield significant results. This suggests that tracking political reforms leads to better assessments of political risk. In contrast, a low-risk political environment does not guarantee the implementation of structural reforms shortly. We postulate a reform regime of gradual rating improvements and use it to examine the impact of reforms via the political ratings proxy effect.

4.1.3 Calibrated political regimes

In Figure 2, we illustrate the ICRG interquartile scenario range for the three regimes for high-risk countries; see subsection 4.2 for scenario tree calibration and Appendix B.1 for low-risk. Panel A depicts *mean reversion* to the long-term average. Panel B depicts *reforms* improving the rating by five points over five years. Such improvements are observed in our data with a frequency of 26% for high-risk and 16% for low-risk countries. Panel C depicts a *crash*, with a ten-point drop, returning to its long-term average after four years. This significant drop corresponds to about three standard deviations for high-risk countries. Comparable drops over five years occur in our data with a frequency of 5% for high-risk and 1% for low-risk countries, observed in France during the recent snap elections.

We calibrate the model and demonstrate the debt effects of reforms or a crash. In Section 6, we validate the model with corresponding case studies from Italy and France.

4.2 Model calibration

We set up representative high-/low-debt and high-/low-risk eurozone countries. For the high-/low-debt representatives, we average the legacy debt, including interest, of three highly indebted eurozone countries (Italy, Portugal, Spain) and three low-debt (Denmark, Finland, the Netherlands) with respective debts of 125% and 48% of GDP. The term structure of legacy debt is obtained from Eikon-Refinitiv (see Appendix Figure B.2), and we use an equally weighted average to avoid excessive emphasis on the larger economy. For the high-/low-risk representation, we rank the eurozone countries by their ICRG rating and take the average rating of 77 of the bottom quartile as the high-risk country and the average of 87 of the top quartile as low-risk. These representative countries fall within the high/low debt and risk classification of the empirical section, and we use in our tests the more recent political sensitivity coefficients from Table 4.

The DSA risk-free rate is the 10-year forward rate from the AAA yield curves for eurozone sovereigns from the European Central Bank. For a high-yield environment, we take the yield curve of November 2023 with long-term AAA-rated bond yields of about 3%, and for low yields, we take the curve of January 2021 with long-term yields near the zero lower bound. We use GDP growth and primary balance projections from the 2022 IMF World Economic Outlook for five years and then converge to the historical averages; we average the IMF projections for the high- and low-debt countries to obtain representative mean values.

We calibrate $2 \times 2 \times 2$ scenario trees for the controlled experiment using moment matching (Consiglio et al., 2016) so that at each period, the mean values of the risk-free forward rates, growth, and primary balance state variables match the representative projections. The political state variable is matched to the mean values for the three political regimes. The volatilities and correlations of the financial, economic, and fiscal variables are matched to their historical estimates from Zenios et al. (2021). For the political state variable, we need the ICRG standard deviations and correlations with the other variables. High-risk countries have more volatile ratings than low-risk, and we estimate a linear relation between inter-temporal standard deviation and average ICRG ratings to calculate standard deviations of 3.2 and 2.0, respectively.[12] The input moments were accurately matched by a scenario tree with five branches per state for the first four periods and extended linearly thereafter for 125 scenarios. See Appendix B.3 for the tree input data.

We consider debt financing with 1-, 3-, 5-, 10-, and 20-year bonds. For credit risk and term premia we set $\hat{\rho}_c = 3.25$, a_j equal to -25, -15, 0, 50, and 90, respectively, for the five maturities, and $d_{min} = 60$; these estimates are from Alberola et al. (2022) on panel data from 23 EU countries over the period 2015–2020 and are very close to Zenios et al. (2021) over the period 1995-2016. We conduct robustness tests with different slopes of the credit risk premium for low- and high-risk countries and for the fat tails of political risk.

We set a confidence level of 75% for non-increasing debt stock trajectories over a risk horizon of thirty years covering the maturities of existing debt. Blanchard (2022) suggests a horizon of ten years, IMF (2022) uses five to ten, and European Commission (2024) uses four to seven, and we consider shorter horizons in robustness tests. For developed economies, the threshold that markets can refinance is set at 20% of GDP following (Bouabdallah et al., 2017, p. 29).

The high-political-risk countries in the full sample have an average rating of 67, and the low-risk countries 84. These values are lower than the representative eurozone countries of 77 and 87, respectively. The standard deviations of the ICRG ratings of the entire sample are, respectively, 3.8 and 2.9, higher than those of the representative countries with 3.2 and 2.0. Hence, the representative countries we test here are on the low side of the political risk spectrum. Also, the eurozone sovereign bond yields are lower than those of other major markets and emerging economies. The significant effects we uncover in our tests can be even more substantial for different countries.

4.3 Model at work

We first put the model to work under mean-reverting political ratings to document the effect of political risk on (i) the risk-cost tradeoff and (ii) debt sustainability, including uncovering the mechanisms through which sustainability is affected. We then (iii) assess the effects of reforms and crash regimes on debt sustainability, and (iv) benchmark reforms against the pandemic quantitative easing program (PEPP) of the ECB, estimate the fiscal cost for reforms to remain effective, and document the cost of delays. Finally, (v) we evaluate the marginal effects of the yields and growth channels. We also perform several robustness tests.

[12]The slope is -0.12, the statistically significant intercept is 12.41, R^2 is 0.31, and adjusted R^2 is 0.27.

4.3.1 Cost-risk tradeoff

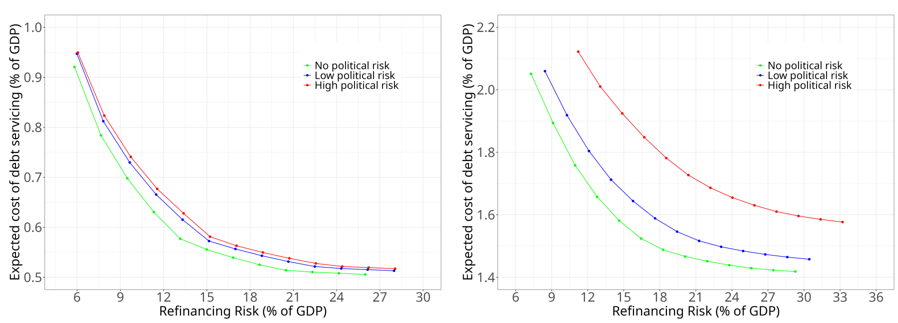
To establish the political risk effect on the trade-off between financing cost and refinancing risk, we trace the efficient frontiers for the high- and low-risk representative countries without and with political risk. In Figure 3, we display the controlled experiments' results and observe that political risk pushes the frontiers towards higher risks and costs.

For low-debt countries and low yields (Panel A), there is a marginal shift from the baseline (green) frontier to the frontier with low (blue) or even high (red) political risk. The effects are more substantial under high yields (Panel B), especially for high-debt countries (Panel D), where we observe a noticeable shift even for low political risk. High political risk increases debt financing costs by over 1% of GDP in a high-yield environment (Panel D), but it also remains significant at about 0.5% of GDP under low yields (Panel C). Refinancing risk also increases significantly. Due to the significant shifts, debt that satisfies the refinancing threshold (20%) when political risk is ignored may violate it when introduced. For instance, in Panel A, most debt financing strategies have refinancing risks below the threshold, with or without political risk. In Panels B and C, more financing strategies violate the threshold when adding political risk. In Panel D, the threshold is violated with political risk. This test documents significant political risk effects for low- and high-risk countries, especially when debt is high. The effects are strong under high yields but remain noticeable under low yields.

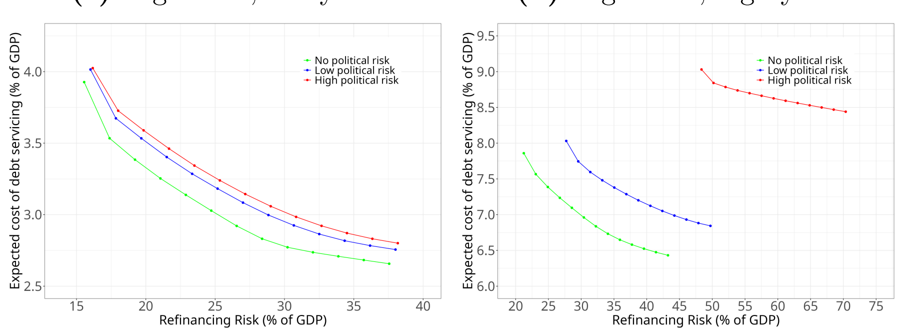
Figure 3 – Political risk effects on the cost-risk tradeoff

This figure displays the tradeoff between the expected cost of debt financing and refinancing risk when accounting for political risk with mean-reverting ratings. In the four panels, we display results for the high- and low-debt representative countries in high- and low-yield environments, as indicated. The green curves are obtained without political risk, blue is for low political risk, and red is for high political risk. Cost is the expected value of net interest payments on debt as a proportion of GDP. Refinancing risk is the expected value of the 0.95 tail of gross financing needs as a proportion of GDP.

(a) Low debt, low yield **(b)** Low debt, high yield



(c) High debt, low yield **(d)** High debt, high yield



4.3.2 Debt sustainability

We zoom in on an intermediate point of the frontiers to examine the political risk effect on debt stock dynamics and assess the sustainability condition of non-increasing trajectories with high probability. We discuss the 7th highest expected cost point, but our findings are robust to other choices. This test illustrates the effect on stock dynamics for an intermediate debt financing strategy; we test later the impact of political risk on the financing strategy.

We display the debt-to-GDP ratio trajectories in Figure 4 for all combinations of debt and political risk levels in a high-yields environment in Panels A-D and for high-debt, high-risk, low-yields in Panel E.[13] The coral-shaded fan charts display the interquartile range of debt dynamics without political risk, and the blue lines display the mean, 25th, and 75th percentiles with political risk. The bottom figure in each panel shows the increase in mean values (pp) when adding political risk. First, we observe that the interquartile range of debt is wider with political risk since we added one more risk factor to the model. This has ramifications for sustainability assessment that looks at the extreme values of the debt distribution. Second, the mean value also worsens, increasing to 50 pp for high-debt countries with high political risk.

From the mean-reverting political ratings of this test, the increasing mean value debt trajectory demonstrates that rating uncertainty and not only the level affect debt, as argued in section 4.1. This aligns with literature on the discount rate channel of political risk effects on asset prices, documented by Brogaard et al. (2020); Gala et al. (2023). A second mechanism leading to an upward shift of the mean value trajectory is the nonlinear effect of debt stock on refinancing rates (eqn. 8). Even for zero-mean ICRG changes, for those scenarios where ICRG worsens, the political spread has a higher negative effect on debt increase than in scenarios where political ratings improve and debt declines. Hence, even if the expected value of the political spread is zero, its effect on the expected debt is positive. We further tested this mechanism by replacing the spread function with its average of 120 bp in the test of Figure 4, Panel D, for the high debt country, thus assuming away the asymmetric effects of debt on spreads. The increases of the mean value and the 75th percentile from political risk are now lower than when using the nonlinear spread function by about 40pp and 110pp, respectively (now shown).

Panel E demonstrates a key finding of our paper. The average debt stock is declining, and the 75th percentile is almost stable without political risk (coral-shaded fan charts); the high debt appears sustainable in a low-yield environment with the traditional DSA. However, accounting for political risk (blue lines), the mean value and the 75th percentile are upward trending, and debt is unsustainable. The political effects are milder under low yields (compare Panel E with Panel D) but still significantly impact sustainability.

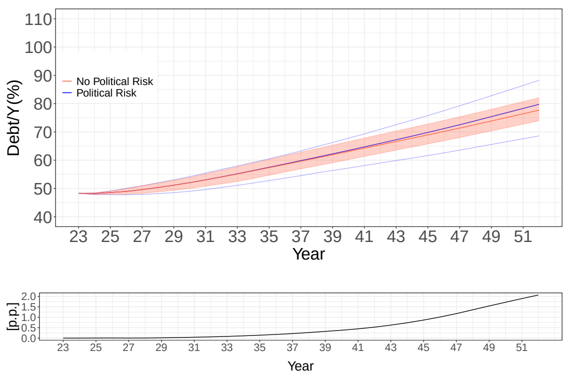
In conclusion, omitting political risk from DSA leads to optimistic debt projections. Political risk can render debt unsustainable. The differences are more pronounced for high-debt countries in a high-yield environment, but can also be significant for low-debt and low-yield countries. The representative eurozone countries have political ratings on the high end of the spectrum, and the eurozone's yields have been low compared to other major markets and emerging economies. The political effects can be even more significant for other countries.

[13] See Appendix Figure C.1 for all combinations of debt and risk levels under low yields, with findings consistent with this section but smaller magnitudes.

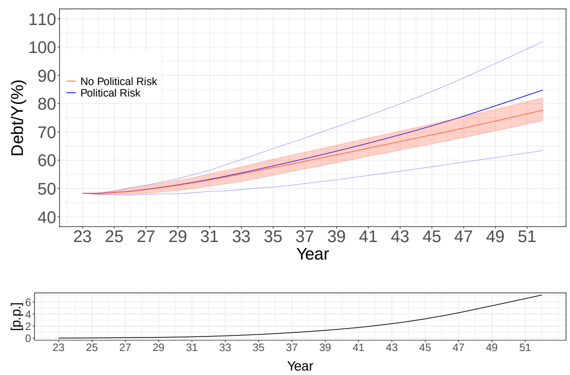
Figure 4 – Political risk effects on debt dynamics

This figure displays debt-to-GDP trajectories without and with political risk with mean-reverting ratings for all combinations of debt and political risk levels in a high-yields environment (Panels A-D) and in a low-yields environment for high-debt and high-risk levels (Panel E). The coral fan charts are without political risk, and the blue lines display the mean, 25th, and 75th percentiles with political risk. The bottom figure in each panel displays the increase in mean values when adding political risk in percentage points (pp).

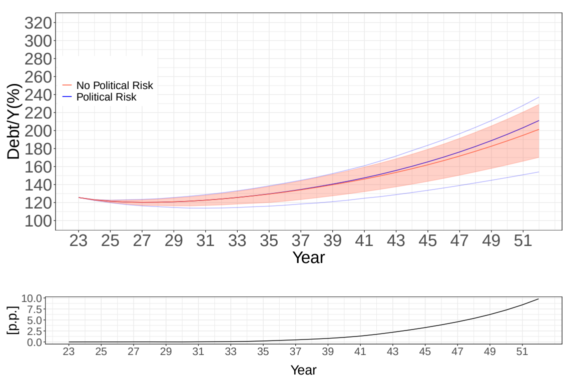
(a) Low debt, low risk, high yields



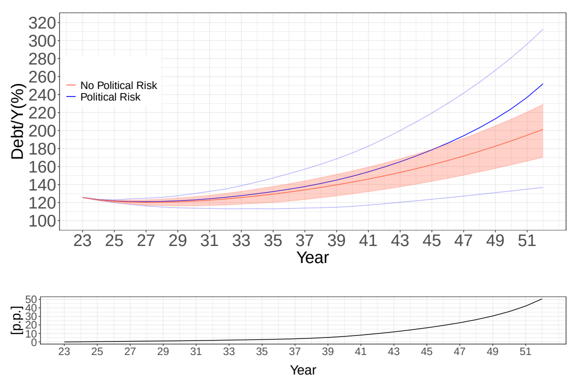
(b) Low debt, high risk, high yields



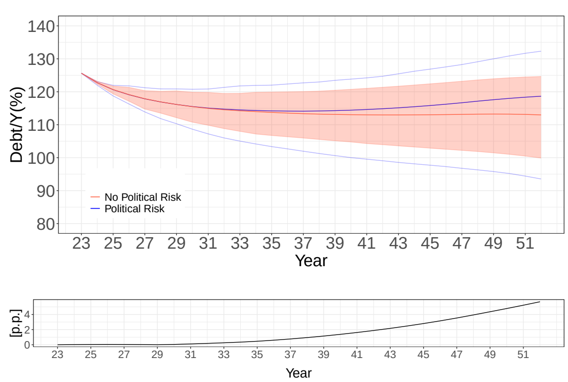
(c) High debt, low risk, high yields



(d) High debt, high risk, high yields



(e) High debt, high risk, low yields



4.3.3 Reforms and crash regimes

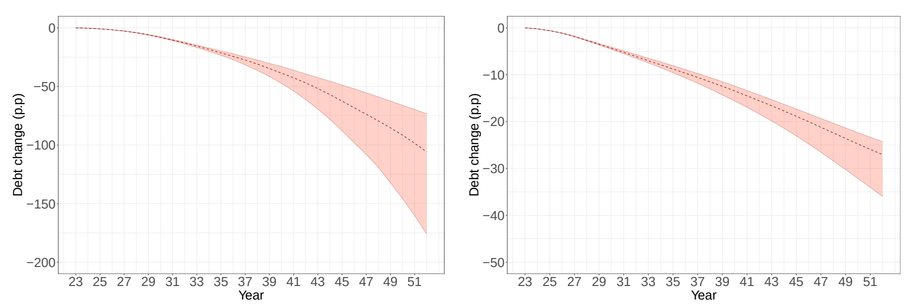
We test the effects of reforms or crash regimes and obtain the impulse response function of the debt ratios to these rating changes. In Figure 5, Panels A-B, we show the impulse response from reforms on high-debt countries in high- and low-yield environments, and we observe debt decreasing at an accelerating rate. Panels C-D display results for the crash, with an increasing impulse response persisting past the crash. We note an inflection point when the ICRG reverts to its long-term average after the crash (around 2032). Still, debt kept increasing since it drifted into unsustainable territory during the crash. For low-debt countries in a low-yield environment (Panel E), debt can stabilize after the crash, albeit at a higher level. Results are consistent for low-risk countries but with a smaller magnitude; see Appendix Figure C.2. Temporary political shocks can have persistent effects on debt.

In Figure 1, we summarize the long-term debt levels following reforms or a crash. We display the interquartile range and the mean value of the differences in debt ratios at the horizon's end for high- and low-debt countries. We observe considerable improvements from the reforms and significant worsening after a crash. For high-risk and high-debt countries, the average change of the debt ratio is a large ± 110% (negative for reforms, positive for a crash). The differences are minor for low-debt, low-risk countries but still significant, averaging about ±20%.

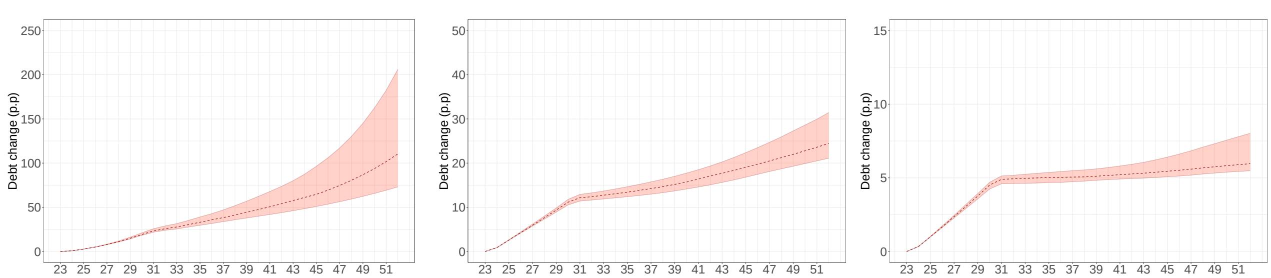
Figure 5 – Debt impulse response to reforms or a crash

This figure displays the interquartile fan charts and median differences of debt-to-GDP trajectories after reforms or an adverse political shock. (a) and (b) are for the reforms illustrated in Figure 2, Panel B, (c)-(e) is for the crash depicted in Figure 2, Panel C, (a)-(d) are for high-debt and (e) for low-debt countries. Results are reported for high and low yields.

(a) Reforms (high debt, high yields) **(b)** Reforms (high debt, low yields)



(c) Crash (high debt, high yields) **(d)** Crash (high debt, low yields) **(e)** Crash (low debt, low yields)



4.3.4 Benchmarking the reforms

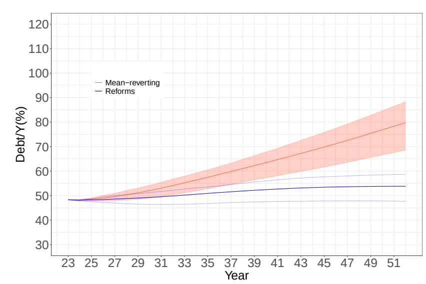
Next, we ask whether structural reforms can effectively restore debt sustainability. Instead of the impulse response, we display in Figure 6 the debt dynamics with reforms (blue lines of mean, 25th, and 75th percentiles) superimposed to the dynamics with the mean-reverting ratings (coral-shaded fan charts) from Figure 4. We observe that the 75th percentile trajectories are stabilized or turn downwards. Reforms can foster stable sovereign debt for high- and low-debt countries with high or low political risk.

To put this finding in perspective, we ask how much fiscal effort is required to stabilize debt without reforms. We iteratively add a fixed proportion of GDP to a high-debt, high-risk country's primary balance —which starts with a deficit of -0.36% of GDP and increases to a long-term surplus of 0.19%— until the 75th percentile is stabilized. We find that an additional fiscal spending of 1.75% of GDP would be required to have the same impact as the reforms.

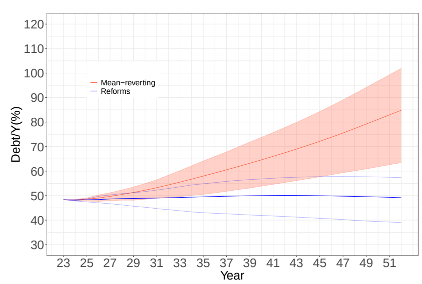
Figure 6 – Restoring debt sustainability through reforms

This figure displays debt-to-GDP trajectories with and without the effects of reforms. The coral fan charts show mean-reverting political risk, and the blue lines display the mean, 25th, and 75th percentiles with reforms. Each panel corresponds to different debt levels with varying levels of political risk, as indicated. The test is conducted in a high-yield environment.

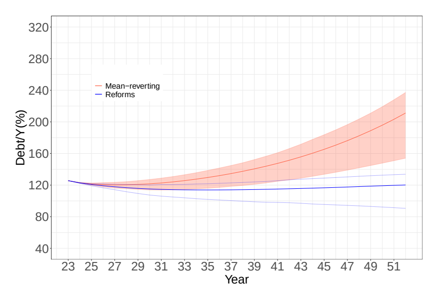
(a) Low debt, low risk



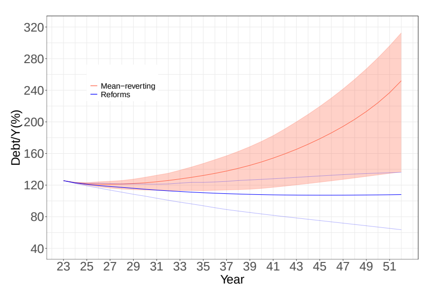
(b) Low debt, high risk



(c) High debt, low risk



(d) High debt, high risk



We take a step further and benchmark the effects of reforms against a natural experiment with the ECB's PEPP.[14] We follow Alberola et al. (2022), who documented the impact of this quantitative easing program on debt sustainability. They estimated a *spread suppression function* from the ECB's asset purchases and tested program reversals with quantitative tightening after five or ten years from its launch (QTearly and QTlate,

[14]See `www.ecb.europa.eu/mopo/implement/pepp/html/index.en.html`. The program reached €1850bn within ten months of launching in March 2020. At its peak, it financed all of the Netherlands' borrowing needs, 1.5 times that of Greece and over half of thirteen countries, significantly lowering financing costs.

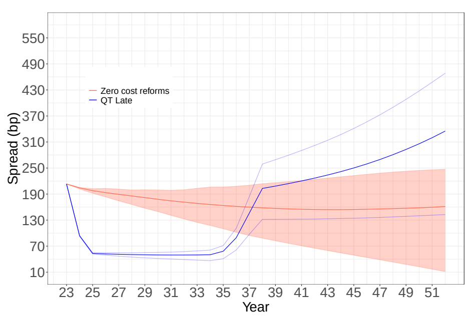
respectively) and lasting for five years. They also considered a boundary case of assets rolled over forever (QEternity). The ECB discontinued reinvestments under the PEPP at the end of 2024, with an average maturity of asset purchases of about eight years, QTlate matches the current exit strategy. Applying the spread suppression to the eurozone high-debt countries, they documented a strong downward effect on debt dynamics. With QTearly, the debt trajectories increase to a long-term average above the pre-pandemic level; with QTlate, it is slightly below the pre-pandemic level, and with QEternity, it trends downwards.

We apply our political DSA to benchmark the effects of reforms for a high-debt country against the PEPP. For PEPP, we use the calibrated spread suppression function for the ECB's rate of asset purchases from the PEPP as a % of the country's marketable securities and the reverse with quantitative tightening. We benchmark the long-term reforms against QTlate and QEterinity and report the results in Figure 7. In Panels A-B, we display the spreads from reforms (coral-shaded fan chart) and those of QTlate and QEternity (blue lines of mean, 25th, and 75th percentiles). The reforms are more impactful than the medium-lived QTlate (Panel A), with spreads following trajectories similar to QEternity (Panel B). In Panels C-D, we compare the debt trajectories. The debt trajectories with reforms are non-increasing at the 0.75 level and are lower than those achieved with QTlate or QEternity. While the reform spreads are somewhat higher than those with QEternity (Panel B), the debt trajectories are lower due to the growth effect of reforms.

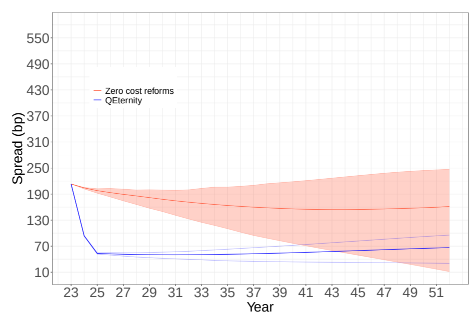
Figure 7 – Benchmarking reforms against quantitative easing

This figure displays in (a) and (b) the spreads with the improved ratings from the reforms of Figure 2, Panel B, with alternative exit strategies from the ECB's pandemic quantitative easing program. (c) and (d) display the corresponding debt-to-GDP ratios. Exit strategy QTlate reverses the asset purchases quantitative tightening after ten years, and QEternity rolls over the purchases forever.

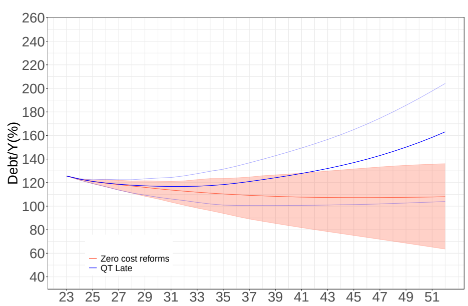
(a) QTlate spreads



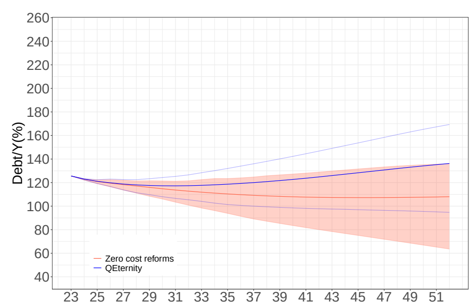
(b) QEternity spreads



(c) QTlate debt dynamics



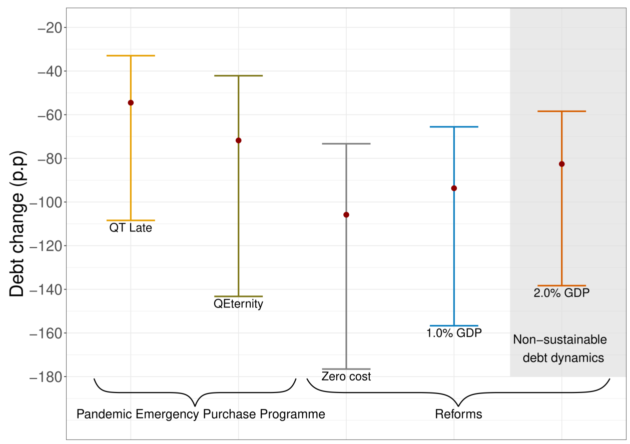
(d) QEternity debt dynamics



Our analysis assumes that the reforms are self-financed, and we next ask how costly they can be and still stabilize debt. We consider costs of up to a large 2% of GDP per annum for the duration of the reforms and compute the difference of debt ratios from the mean-reverting case at the end of the horizon. In Figure 8, we display the mean and interquartile range of the difference and compare it with the quantitative easing programs. For costs up to 1% of GDP, the debt changes are comparable to those from QEternity, and the debt trajectories (not shown) are stable or downward-sloping. More costly reforms do not stabilize the debt.

Figure 8 – Benchmarking the cost of reforms

This figure displays the changes in debt-to-GDP ratios at the end of the horizon of different exit strategies from ECB's pandemic emergency purchase program and for reforms that improve the political ratings at a cost of zero, 1, or 2% of GDP per annum for the duration of the reforms. The grey-shaded area corresponds to upward-sloping debt stock trajectories. QTlate corresponds to exiting the PEPP with quantitative tightening after ten years, and QEternity corresponds to rolling over the purchases forever.



Finally, we test reform delays assuming that the ICRG rating remains unchanged for two to four years before gradually drifting toward a higher level. We find that such delays reduce the affordable cost of reforms. To achieve the stable dynamics of immediate 1%-cost reforms after a 2-year delay, the cost has to be reduced to 0.5% GDP per annum. With a 4-year delay, the cost has to be reduced to zero; see Appendix Figure C.3. Reform delays can reduce the available fiscal space. This finding aligns with Blanchard et al. (1990) that delaying fiscal adjustments for sustainability increases the cost of the adjustment.

The answer to the question posed in this section is that structural reforms of modest cost can be as effective as major quantitative easing programs. Reforms' political rating improvements are shown to be a first-order issue in debt analysis and can stabilize sovereign debt. This finding has policy implications for international institutions that use DSA.

4.3.5 Marginal effects of yields and growth channels

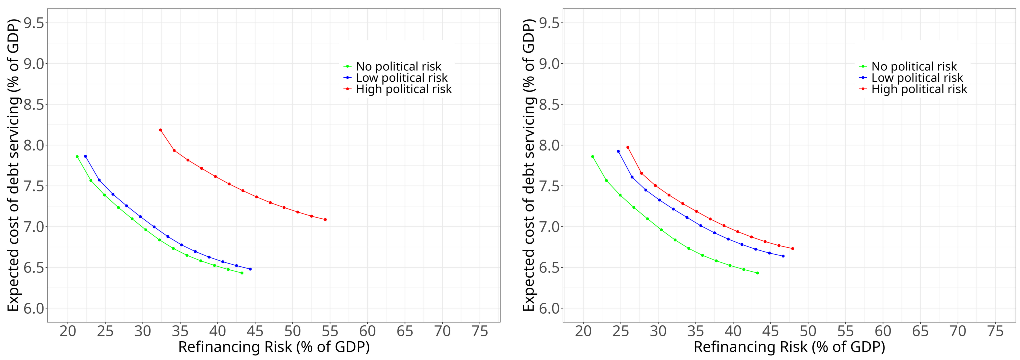
We test the margins of political risk effects through the yields and growth channels. In Figure 9, we illustrate the shifts of the cost-risk tradeoff from political risk through the yields (Panel A) or growth (Panel B) channels for high-debt countries in the high-yields environment. We notice significant shifts for high-risk countries with either channel, with slight shifts for low-risk countries. However, the joint effect reported in Figure 3, Panel D, is more than the sum of the marginals.

Looking at the debt stock fan charts over the risk horizon for each channel separately for high-debt, high-risk countries in a high-yield environment, we find an increase of the mean debt ratio by about 15 bp

Figure 9 – Marginal effects of the yields and growth channels

This figure displays results on the marginal effects of the yields and growth channels on the cost-risk tradeoffs, drawn at the same scale as Figure 4 with the joint effects. (a) and (b) display the tradeoff between the expected cost of debt financing and refinancing risk when accounting only for the yields or growth channels. Red curves are obtained without political risk, green is for low political risk, and blue is for high political risk with mean-reverting ratings. Results are for high-debt countries in a high-yield environment.

(a) Yields channel **(b)** Growth channel



from the yields effect and eight bp from the growth effect; see Appendix Figure C.4. Compared to the joint 50 bp increase in Figure 4, Panel D, political risk effects are amplified when considered jointly since the debt increase from either channel increases the risk premium, adding to the cost of debt financing.

4.3.6 Robustness tests

We conduct robustness tests using different model calibrations to check whether our findings are robust to different calibrations and whether the model results are stable to data perturbations.

We first address a potential concern that the slope of the risk premium function (8) may differ for high- and low-political risk countries and test for slopes $\hat{\rho}_c = 2$ and 4; this is the range suggested by Blanchard et al. (2021) and brackets our baseline estimate of 3.25. We develop the cost-risk frontiers for high-risk countries with a slope of 4 and low-risk countries with a slope of 2; see Appendix Figure C.5. The frontiers shift to the right for the higher slope, and the magnitude of the political effect increases. Conversely, the frontiers move to the left for the lower slope, with a minor political effect. Our main finding of significant political risk effects on the cost-risk tradeoff is robust to these calibrations, although the magnitude is calibration-dependent.

We then test the robustness of our results to the fat tails of political risk (Bremmer and Keat, 2010; Gala et al., 2023). The calibration of the scenario tree can match higher-order moments (Consiglio et al., 2016), but in our main tests, we matched means, variances, and correlations for parsimony. We recalibrated a tree to match the skewness and kurtosis of the ICRG ratings (averaging -0.21 and 2.27, respectively, over the three countries in our high-debt representative). Testing for the political risk effects on debt dynamics from Figure 4, Panel D, on the new tree, we observe marginal differences; see Appendix Figure C.6.

We finally ran several tests with shorter risk horizons. The results are robust in the direction and statistical significance of the debt changes to shorter time horizons. However, the magnitude of the impact is higher for the longer horizons that cover the full maturity of legacy debt, as expected. This is illustrated in Appendix Figure C.7 by comparing the results from reforms and crashes for three different horizons.

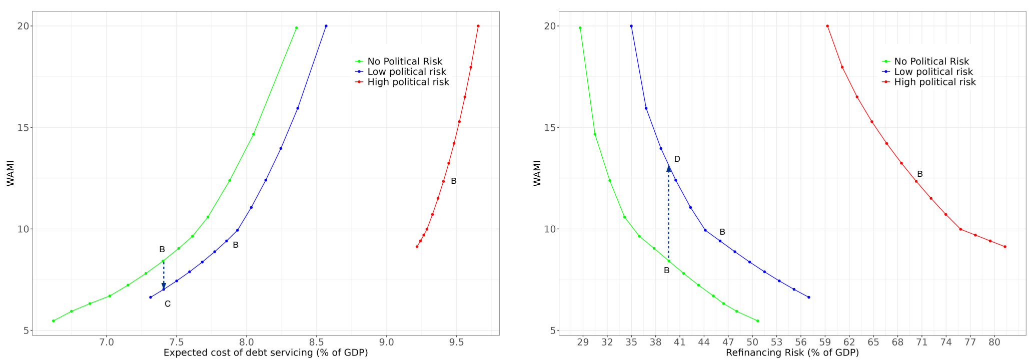
5 Extension: Sovereign debt management

We consider the effect of political risk on the optimal debt financing maturities. The shift of efficient frontiers with political risk suggests that debt managers may change their maturities. Financing strategies remain unchanged at minimum risk or cost extremes, but the optimal maturities can change for intermediate strategies. We plot in Figure 10 the optimal weighted average maturity at issuance (WAMI) vs. expected cost of debt financing (Panel A) and refinancing risk (Panel B). These results are based on a fixed mix strategy. (We obtained similar results for the average WAMI over the risk horizon with adaptive fixed mix.)

Figure 10 – Optimal debt financing maturities under political risk

This figure displays the weighted average maturity at issuance (WAMI) at different points of the efficient frontier. It displays the WAMI vs (a) expected cost of debt financing and (b) refinancing risk. Point B denotes the intermediate financing strategies for all political risk levels. Point C is the low political risk strategy with the same cost as the intermediate no political risk strategy. Point D is the low political risk strategy with the same risk as the intermediate no political risk strategy. This example is for high-debt countries in a high-yield environment and political risk under mean-reverting ratings.

(a) WAMI vs. cost of debt financing **(b)** WAMI vs. refinancing risk



From Panel A, we observe that we can not maintain a constant cost of debt financing under high political risk. The red and blue frontiers do not overlap, and the intermediate strategies (point B on both frontiers) are achieved with WAMI of 9 and 12 years, respectively, with correspondingly higher expected costs from 8% to 9.5% of GDP. For low political risk, it is possible to maintain the expected cost below 7.5% by shifting from point B on the green frontier to point C on the blue with a somewhat shorter maturity of about one year, but this entails an increase of refinancing risk.

From Panel B, we observe that we can not maintain constant refinancing risk under high political risk; the intermediate strategy's (points B) 75th percentile of refinancing risk is about 70% GDP with political risk, compared to 40% without. With low political risk, it is possible to keep refinancing risk constant by shifting to point D with WAMI of about 13 years, at an expected cost increase from 7.5% to 8.25%.

In conclusion, political risk affects the optimal debt financing maturities. This has the policy implication that public debt management must consider expectations about political risk in setting the key policy parameter of the maturity of newly issued debt.

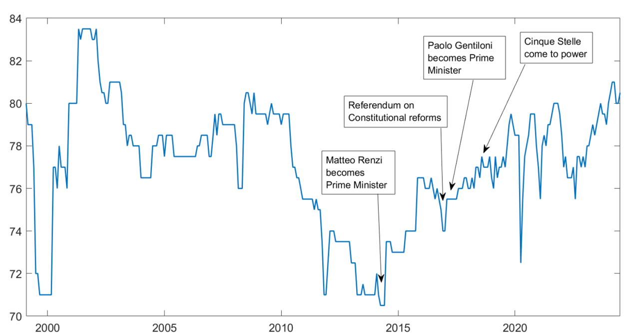
6 Case studies for Italy and France

We validate the model out-of-sample on Italy's 2014-2019 reforms and study the ratings crash in France from the 2024 snap elections. Both examples reaffirm the significance of political risk in debt sustainability analysis, and the ex-post case study for Italy corroborates the model predictions. The ICRG ratings for each country are shown in Figure 11, Panels A-B.

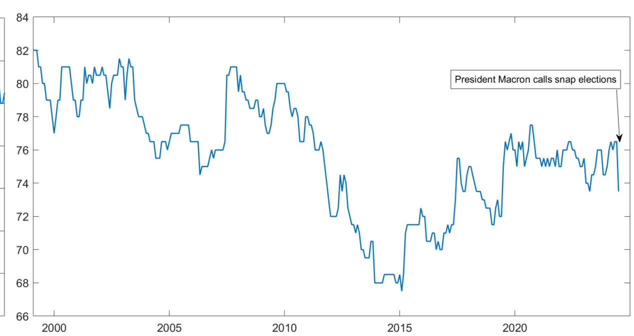
Figure 11 – Country case studies: Italy 2014-2019 and France 2024

This figure displays the large swings in the time series of political ratings for (a) Italy and (b) France, using the ICRG aggregate political risk ratings (PRS, 2005). The ratings are 0-100, with standard deviations for these two countries of, respectively, 3.12 and 3.01. Data are monthly, spanning the period 1999-2021. Panels (c) and (d) display the debt-to-GDP trajectories obtained with and without political DSA for the case of the Italian reforms during 2014-2019 and the French snap elections of the summer of 2024. The coral fan charts are factual with political risk projections, and the blue lines display the mean, 25th, and 75th percentiles of a counterfactual without changes in political ratings. The counterfactual for Italy is that the ratings did not change (increase) during the 2014-2019 reforms. The counterfactual for France is that political ratings do not change (drop) due to the 2024 snap elections. Triangles denote the ex-post realized debt ratios for Italy and the 2024 World Economic Outlook debt projections for France.

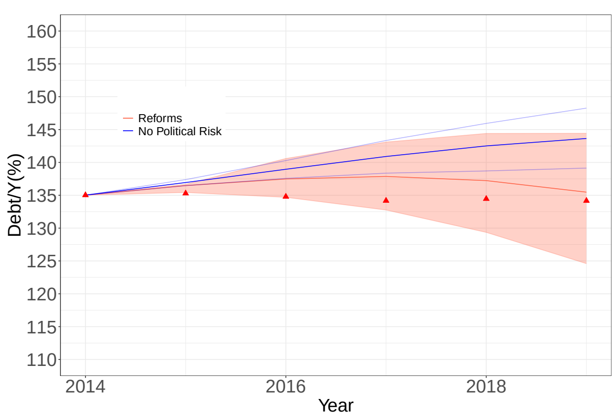
(a) ICRG ratings for Italy



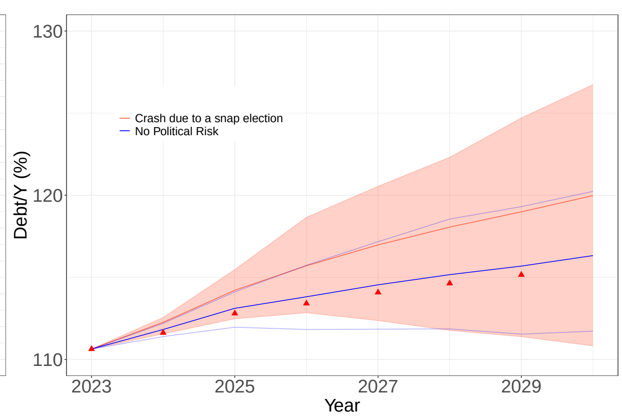
(b) ICRG ratings for France



(c) DSA for the Italian reforms



(d) DSA for the French snap elections



6.1 Italian reforms

Italy's political ratings improved significantly from 2014 to 2019. The pro-reforms Matteo Renzi became Prime Minister of a coalition government following a strong showing by his Democratic Party in the February 2014 elections on a "1000-day reform agenda" that included the Jobs Act of 2015, the Annual Competition Law, and public administration and the judiciary reforms. However, he failed to win a referendum on Constitutional reforms in December 2016. He was succeeded by the Minister of Foreign Affairs, Paolo Gentiloni, who continued the reforms until June 2018, when the opposition party Cinque Stelle came to power. While some of these reforms were controversial,political ratings increased by two standard deviations, from 73 to above 79, during this period, providing an example of reforms improving political ratings.

We run the model with the improved ICRG ratings and a counterfactual without, using the historical primary balance to filter out fiscal spending effects. We calibrated the model to country estimates of the political sensitivities of yields and growth. We regressed monthly GDP excess yields or growth on the demeaned ICRG and control variables from the Great Financial Crisis to 2014. The GDP intercept is 1.09%, and the yield is 2.09% for the univariate and multivariate regressions. The multivariate betas are strongly statistically significant. Forward-looking projections of expected bond yields and growth for DSA are from eqns. (10)-(11) conditional on the ICRG states from a scenario tree calibrated on the factual ICRG (linearly smoothed). Growth projections are from the 2013 WEO. Volatilities and correlations are from Appendix B.3.

Figure 11, Panel C, shows that mean projections from the political DSA (red line) are much closer to the ex-post observed values (red triangles) than projections from traditional DSA (thick blue line). The coral-shaded fan displays the 25th and 75th percentiles of the factual and the thin blue lines of the counterfactual. The observed values are within the 25-75th percentiles of the political DSA projections but well below the 25th percentile of the counterfactual. The projected debt dynamics are sustainable with high confidence, whereas ignoring the improved ratings predicts steadily rising debt. Accounting for political risk would have given better predictions of Italian debt, given the reforms.

6.2 French snap elections

Following his party's defeat in the European elections in June 2024, President Macron announced that he was dissolving the National Assembly and calling parliamentary elections. The Assembly's five-year term was shortened to 2024 from 2027 when France also holds presidential elections. Political ratings, which had been stable at 76 for five years with a standard deviation of 0.85, crashed by almost three standard deviations.

We project debt trajectories assuming that the 2024 ratings drop will persist until the 2027 elections. We obtain debt from Eikon-Refinitive, primary balance projections from the 2024 WEO, and approximate the French government bond yields as the average of the AAA-rated and "All" bond yields from the ECB of July 2024. France is a high-risk country, and we use the corresponding coefficients from Table 4.

We display the debt dynamics in Figure 11, Panel D. The coral-shaded fan displays the results with political DSA, blue lines are the mean, 25th, and 75th percentiles without political risk, and red triangles are the WEO projections. The traditional DSA has mean values close to the IMF projections, but the crash pushes the debt trajectories upwards. Political DSA gives a very different view of the expected debt profile. To quantify the magnitude of the political impact, we estimate the adjustments to the primary balance that will stabilize the 75th percentiles of the debt ratio by 2030 without and with the rating crash. Without the crash, a primary balance increase of 0.5% GDP per annum will suffice; this is in line with the estimates of 0.4-0.6% of (Darvas, Welslau, and Zettelmeyer, 2023, Table 1B). Accounting for the crash, the primary balance adjustment increases to about 1.25% of GDP.

7 Conclusion

Using a granular country-level proxy for political risk, we document significant political sensitivities of sovereign bond yields and economic growth for a large panel of countries. Subsample analysis shows significant political sensitivities for developed countries. We also uncover a positive predictive relation between structural reforms and political ratings. A political debt sustainability analysis model incorporates both yield and growth channels and establishes political risk effects on debt sustainability of developed and not only emerging markets.

Putting the model to work on representative eurozone countries under regimes of mean-reverting political risk, long-term reforms, or a crash, we establish several new findings: Political risk matters even when its expected value is zero; its effects on debt come from both the level and uncertainty of political ratings; the effects are significant and can reveal that seemingly sustainable debt is unsustainable; reforms can lower political risk and stabilize debts, preempting significant fiscal spending for debt repayment; Reforms are shown to be equally effective as the major pandemic emergency purchase quantitative easing program of the European Central Bank; crashes of political ratings are observed to be not that rare in the data, and they can have a large impact. Political risk also impacts public debt management through the choice of optimal maturities. The political effects on debt are substantial for high-debt countries during high interest rates.

Structural reforms can restore the debt sustainability of high-debt countries at times of high interest rates, and public debt management must consider political risk expectations. These results have policy implications, suggesting a need to account for political risk in the debt analysis of international institutions, debt management offices, and the EU fiscal framework.

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Online Appendix

Is political risk a threat to sovereign debt sustainability?

S. Ajovalasit, A. Consiglio, G. Pagliardi, S.A. Zenios.

A The ICRG data

Table A.1 – ICRG summary statistics

This table displays statistics for the International Country Risk Guide composite political ratings -ICRG (PRS, 2005) for (a) developed and (b) emerging markets over the period 1999-2021.

(a) Developed economies

Country	Mean	StDev	Skewness	Kurtosis	95%	99%
Australia	85.50	2.25	-0.17	-1.08	89.00	89.00
Austria	85.10	3.30	0.22	-1.34	90.00	91.13
Belgium	81.10	3.06	0.49	-1.08	86.50	87.00
Canada	86.50	1.49	0.78	0.68	89.50	91.00
Denmark	84.10	4.83	0.22	-0.77	93.00	94.00
Finland	90.50	3.07	-0.15	-1.60	94.50	95.00
France	75.80	3.70	-0.40	-0.76	81.00	81.63
Germany	84.40	2.10	0.17	-0.71	88.00	89.00
Hong Kong	77.80	4.03	-0.88	-0.20	82.63	83.50
Ireland	85.90	4.33	-0.55	-0.56	92.00	92.50
Israel	64.40	2.97	-0.84	0.46	68.00	69.00
Italy	76.90	3.01	-0.31	-0.27	81.00	83.50
Japan	81.80	2.61	0.24	-0.40	86.50	88.00
Netherlands	86.40	4.14	1.18	0.33	96.00	97.00
New Zealand	87.80	1.72	0.35	-0.29	91.00	91.50
Norway	87.80	1.74	-1.72	6.90	90.00	91.13
Portugal	81.10	5.51	-0.21	-0.69	90.00	90.00
Singapore	83.70	2.32	0.79	0.50	89.00	90.00
Spain	75.50	4.68	0.02	-1.13	82.50	83.50
Sweden	88.00	2.05	0.67	-0.45	92.00	93.00
Switzerland	88.20	1.93	1.03	0.94	92.50	93.00
United Kingdom	82.80	4.01	0.36	-0.41	90.00	92.00
United States	82.70	3.12	0.54	0.51	89.50	90.25
Overall mean	82.77	3.13	0.08	-0.06	88.01	88.94

(continued)

(b) Emerging economies

Country	Mean	StDev	Skewness	Kurtosis	95%	99%
Brazil	65.50	2.48	-0.36	-0.48	69.00	69.63
Chile	75.90	3.35	-0.04	-0.64	81.00	82.50
China	62.90	4.72	0.12	-1.19	70.50	70.50
Colombia	57.60	4.08	-1.01	0.34	62.50	63.00
Czech Republic	77.90	1.88	-0.37	0.38	81.00	82.00
Egypt	58.10	5.75	-0.46	-1.02	65.00	66.50
Greece	73.60	4.40	-0.60	-0.80	79.00	80.00
Hungary	77.70	3.04	0.25	0.00	82.63	85.25
India	60.50	2.98	-0.57	-0.27	64.50	65.25
Indonesia	55.50	5.69	-0.92	-0.25	61.50	62.50
Korea, South	77.00	1.77	-0.60	0.20	79.50	80.50
Malaysia	71.80	2.87	0.02	-0.47	77.00	77.50
Mexico	67.70	4.91	-0.24	-1.05	75.00	76.00
Peru	63.50	2.28	1.00	1.93	68.00	71.50
Philippines	63.40	3.06	1.02	0.82	69.00	73.00
Poland	77.20	2.34	0.64	0.76	81.00	85.00
Qatar	72.80	1.93	0.55	2.29	76.00	80.00
Russia	60.40	5.12	-0.60	0.98	67.50	68.63
Saudi Arabia	67.50	2.25	0.23	-0.40	71.63	72.50
South Africa	66.20	2.52	0.32	-0.69	71.00	71.50
Taiwan	78.30	2.06	-0.18	-0.68	81.50	82.13
Thailand	60.90	6.44	0.84	-0.94	72.50	73.00
Turkey	57.40	5.28	0.80	-0.29	68.00	70.00
Overall mean	67.36	3.53	-0.01	-0.06	72.79	74.28

Table A.2 – Subsample temporal and cross-country ICRG statistics.

This table displays statistics for the International Country Risk Guide composite political ratings -ICRG (PRS, 2005) for the different subsamples of the 46 countries, respectively, mean value, standard deviation, skewness, and excess kurtosis. Panel A displays statistics of the temporal variability over 1999-2001, averaged over all countries in each subsample. Panel B displays the cross-country variability in each subsample, averaged over the sample period.

(a) Temporal variability

	Mean	StDev	Skew	Kurt	95%	99%
All countries	75.07	3.33	0.04	-0.06	80.40	81.61
Developed economies	82.77	3.13	0.08	-0.06	88.01	88.94
Emerging economies	67.36	3.53	-0.01	-0.06	72.79	74.28
Low debt	72.95	3.27	0.00	0.25	78.18	79.41
High debt	77.18	3.39	0.07	-0.38	82.61	83.81
Low political risk	83.58	2.91	0.16	0.03	88.60	89.67
High political risk	66.56	3.75	-0.09	-0.16	72.20	73.55
(b) Cross-country variability						
All Countries	75.07	10.73	-0.45	-0.82	88.78	90.51
Developed economies	82.78	6.32	-1.36	2.67	89.50	90.90
Emerging economies	67.37	8.42	-0.12	-0.83	78.86	80.03
Low debt	72.96	11.48	-0.17	-1.08	88.50	89.27
High debt	77.19	9.65	-0.73	-0.27	88.61	90.38
Low political risk	83.58	4.65	-0.35	-0.39	89.50	90.90
High political risk	66.56	7.84	-0.09	-0.71	77.82	79.09

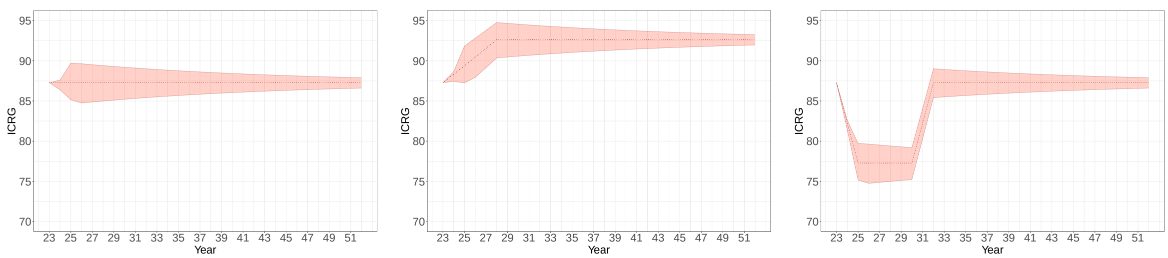
B Model calibration

B.1 Political regimes for low-risk country

Figure B.1 – Political regimes for a low-risk country: mean reversion, reforms, and crashes

This figure displays the fan charts of the ICRG political ratings for three regimes: (a) Political risk reverting to its long-term mean (dashed line), (b) improved political rating by one standard deviation over five years, and (c) a crash with a significant drop in rating by three standard deviations and subsequent return to the mean.

(a) Mean reversion **(b)** Reforms **(c)** Crash

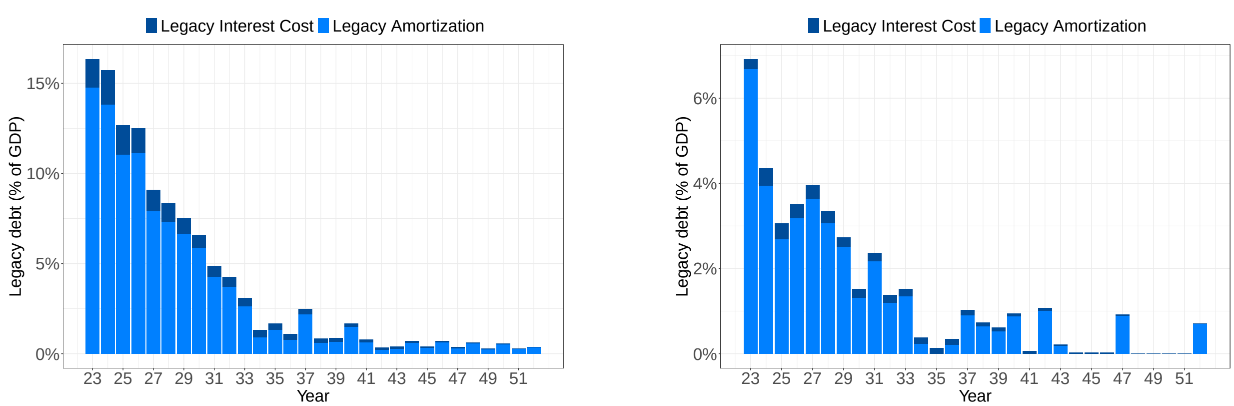


B.2 Representative countries

The term structure of the legacy debt stock and interest payments of the representative high- and low-debt countries (HD, LD) is shown in Figure B.2.

Figure B.2 – Legacy debt for high- and low-debt countries

(a) High debt **(b)** Low debt



B.3 Scenario trees

Here, we provide the moments for matching the trees and display the resulting fan charts. We estimate standard deviations and correlations of the exogenous variables from the time series of the IMF World

Economic Outlook data from 1998-2019 and show the results in Table B.1. For the real growth and primary balance time series, we equally-weighted average the data of the representative eurozone countries, namely Italy, Portugal, and Spain for high-debt, and Denmark, Finland, and the Netherlands for low-debt. Figure B.3 shows the high and low bond yields.

Table B.1 – Moments for the scenario tree calibration

(a) Long-term mean values

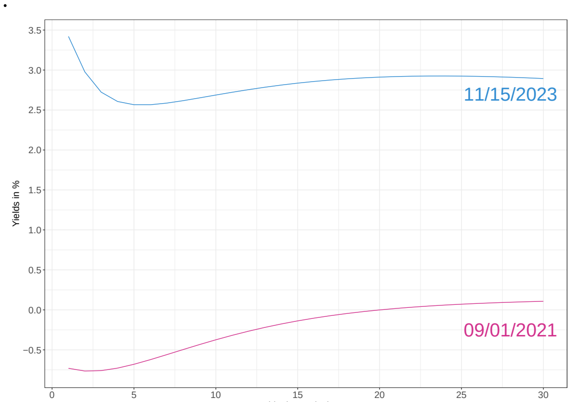
	High debt	Low debt
High yields	2.87%	
Low yields	1.20%	
GDP growth	3.30%	3.50%
Primary balance	0.19%	-1.42%
High risk ICRG	77	
Low risk ICRG	87	

(b) Volatilities and correlations

Factors	Standard Deviations	Correlations			
Yield	0.85	1.00	-0.20	-0.03	0.33
GDP Growth	0.75		1.00	0.25	0.20
Primary Balance	0.15			1.00	-0.16
ICRG (High risk/Low risk)	3.2/2.0				1.00

Figure B.3 – Reference yield curves

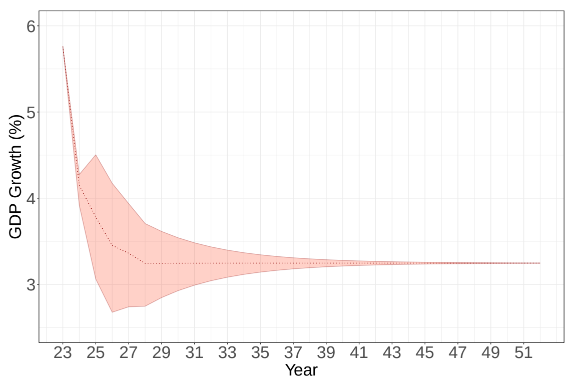
We display the reference yield curves of AAA-rated eurozone sovereign bonds from the European Central Bank. The high-yield (HY) scenario is based on the curve of 15/11/2023, and the low-yield (LY) scenario uses the curve of 09/01/2021.



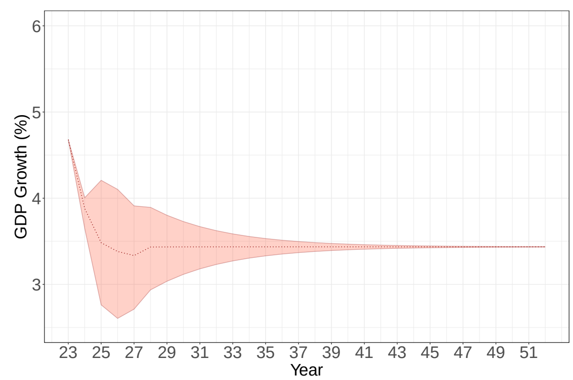
We calibrate a tree on this input data. For computational tractability, our tree has four branches at each period for the first five years, with no further branching afterward for 256 scenarios. In Figure B.4, we illustrate fan charts of GDP growth and primary balance of high- and low-debt countries. In Figure B.1, we display the political scenarios for the low-risk representative country. The dashed lines show the mean-value input data.

Figure B.4 – GDP growth and primary balance for the representative countries

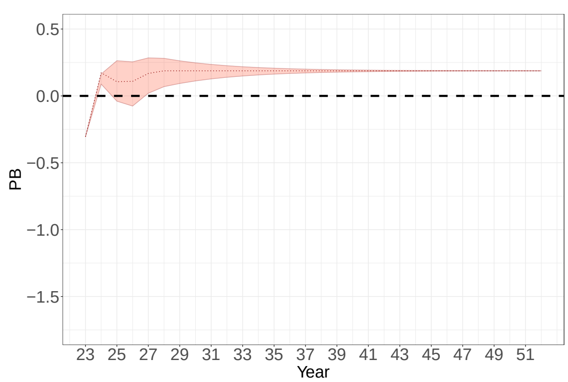
(a) GDP growth, high-debt



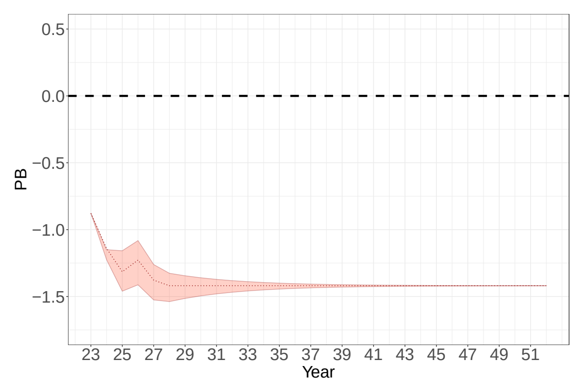
(b) GDP growth, low-debt



(c) Primary balance, high-debt



(d) Primary balance, low-debt



C Supplementary results

Table C.1 – Primary balance and political risk

This table reports the results of a panel regression of primary balance on the ICRG political ratings and a set of control variables. Column "All" is for all countries. The other columns report results on subsamples for different country classifications: high vs. low debt-to-GDP (HD, LD), high vs. low political risk (HR, LR), and emerging vs. developed markets (EM, DM). The primary balance is expressed as a percentage of GDP and retrieved from the IMF annually. Debt is denominated in local currency and scaled by GDP; real GDP and inflation are expressed in growth rates, and the current account is a percentage of GDP. All monthly and quarterly variables have been converted into annual frequency, taking the average across months or quarters of the same year. All regressions include country and time-fixed effects. Standard errors are robust and clustered at the country level. The asterisks (***), (**), and (*) denote statistical significance at the 1%, 5% and 10% level, respectively. The sample spans 46 countries with annual observations from 1999 to 2021.

	ALL	HD	LD	HR	LR	EM	DM
ICRG	0.056	0.055	0.085	0.078	0.114	0.146**	0.070
	(0.394)	(0.485)	(0.342)	(0.291)	(0.279)	(0.053)	(0.468)
Debt-to-GDP	-0.045***	-0.035*	-0.034	-0.021	-0.051***	-0.012	-0.049***
	(0.001)	(0.071)	(0.186)	(0.389)	(0.002)	(0.655)	(0.002)
GDP growth	-117.085	-255.236	23.419	19.458	-313.088*	88.542	-352.302**
	(0.319)	(0.106)	(0.753)	(0.806)	(0.101)	(0.139)	(0.029)
Inflation	-25.211	11.303	-19.868	-63.325**	152.430	-34.522	227.938
	(0.559)	(0.912)	(0.622)	(0.044)	(0.440)	(0.257)	(0.344)
Current account	-2.250	2.857	-7.147	-16.327**	9.054	-8.534	6.706
	(0.663)	(0.711)	(0.274)	(0.016)	(0.188)	(0.131)	(0.303)
VIX	-0.830**	-0.768**	-0.793	-0.111	-1.067**	0.052	-0.885**
	(0.015)	(0.017)	(0.219)	(0.711)	(0.051)	(0.843)	(0.043)
R^2	0.285	0.345	0.165	0.255	0.396	0.061	0.402
Nr observations	806	426	380	382	424	358	448

Table C.2 – Political risk and bond yields controlling for macro volatility

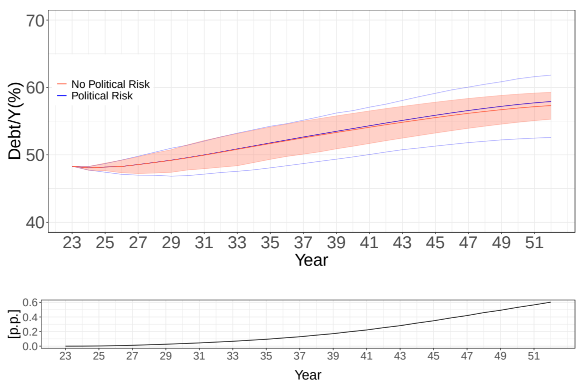
This table reports the results of a panel regression of excess bond yields on the ICRG political ratings and a set of control variables. Column "All" is for all countries. The other columns report results on subsamples for different country classifications: high vs. low debt-to-GDP (HD, LD), high vs. low political risk (HR, LR), and emerging vs. developed markets (EM, DM). Yields are expressed in excess of the risk-free rate, proxied by the one-month Euribor for eurozone countries and the US one-month T-bill rate for all other countries. Debt is denominated in local currency and scaled by GDP. Real GDP and inflation are expressed in growth rates. The primary balance is denominated in billions of USD, and the current account is a percentage of GDP. The series of the volatilities of the macroeconomic variables, denoted by "VOL", have been constructed as the squared residuals from AR(1) processes fitted on each of the macroeconomic variables. All monthly variables have been converted to quarterly frequency before fitting AR(1) processes on quarterly data for consistency with variables available at quarterly frequency. Debt-to-GDP, available annually, has been kept at the same frequency to construct its volatility series, and the latter has been converted to quarterly frequency by repeating the same values for all months in the same quarter. The original coefficients are rescaled as follows: volatility of current account by 10^2, political risk and primary balance by 10^3, debt-to-GDP and volatility of primary balance by 10^4, and VIX, volatility of debt-to-GDP, and volatility of VIX by 10^5. All regressions include country and time fixed effects. Standard errors are robust and clustered at the country level. The asterisks (***), (**), and (*) denote statistical significance at the 1%, 5% and 10% level, respectively. The sample spans 46 countries with quarterly observations from 1999 to 2021.

	ALL	HD	LD	HR	LR	EM	DM
ICRG	-1.152***	-1.238***	-1.012***	-0.988***	-1.046**	-0.950**	-0.879**
	(0.001)	(0.007)	(0.010)	(0.006)	(0.047)	(0.027)	(0.038)
Debt-to-GDP	1.076	0.235	0.978	-0.275	1.839**	0.087	1.692**
	(0.249)	(0.864)	(0.478)	(0.875)	(0.037)	(0.977)	(0.019)
GDP growth	-0.025**	-0.039**	-0.009	-0.007	-0.028**	-0.016	-0.018
	(0.030)	(0.020)	(0.423)	(0.596)	(0.045)	(0.379)	(0.109)
Inflation	0.948***	1.035**	0.889**	0.998***	0.658*	0.988***	0.163
	(0.002)	(0.058)	(0.016)	(0.008)	(0.058)	(0.009)	(0.533)
Primary balance	-1.527	1.100	-10.270	-5.816	2.726*	-11.166	2.951*
	(0.601)	(0.500)	(0.177)	(0.320)	(0.085)	(0.300)	(0.072)
Current account	-0.032	-0.042	-0.025	-0.052	-0.014	-0.091**	-0.006
	(0.110)	(0.123)	(0.421)	(0.171)	(0.331)	(0.025)	(0.623)
VIX	-3.150	-5.950	-0.003	11.920	-13.000*	20.270**	-21.300***
	(0.586)	(0.556)	(1.000)	(0.199)	(0.090)	(0.030)	(0.000)
Debt VOL	1.630*	2.280**	-0.772	1.820	1.580	-1.740	1.850**
	(0.072)	(0.050)	(0.835)	(0.335)	(0.089)	(0.503)	(0.054)
GDP VOL	0.152	-0.027	0.330*	0.340**	-0.150*	0.373**	-0.165*
	(0.220)	(0.815)	(0.065)	(0.014)	(0.092)	(0.011)	(0.093)
Inflation VOL	10.486***	-15.118	10.113***	10.263***	19.749	10.899***	61.818*
	(0.002)	(0.772)	(0.007)	(0.002)	(0.615)	(0.002)	(0.090)
PB VOL	-3.817	0.725	36.798	41.927	3.656	-3.789	3.559
	(0.423)	(0.765)	(0.500)	(0.412)	(0.119)	(0.965)	(0.170)
CA VOL	-0.087	-4.303	31.798	31.280	5.277	47.871	4.233
	(0.982)	(0.411)	(0.509)	(0.799)	(0.141)	(0.587)	(0.189)
VIX VOL	0.677***	0.693**	0.671**	0.837**	0.469*	0.754*	0.187
	(0.004)	(0.032)	(0.040)	(0.030)	(0.056)	(0.066)	(0.320)
R^2	0.502	0.550	0.575	0.486	0.261	0.503	0.187
Nr observations	3,103	1,623	1,480	1,356	1,747	1,328	1,775

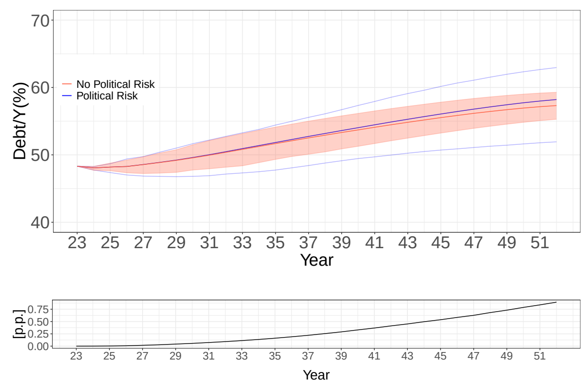
Figure C.1 – Political risk effects under low interest rates

We display debt-to-GDP trajectories with and without political risk in a low-yield environment. The coral fan charts are without political risk, and the blue lines display the mean, 25th, and 75th percentiles with political risk. Below the fan charts in each panel, we display the increase in mean values when adding political risk in percentage points (pp). Each panel corresponds to different debt levels and under different levels of political risk, as indicated.

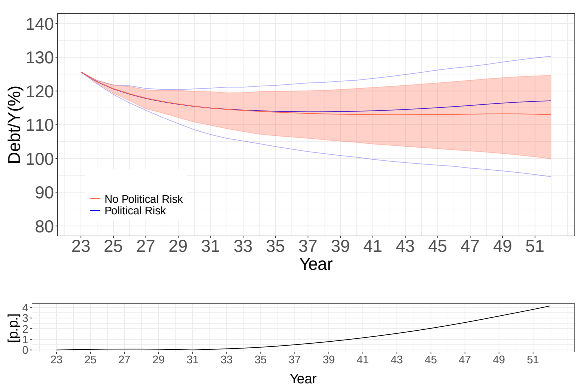
(a) Low debt, low risk



(b) Low debt, high risk



(c) High debt, low risk



(d) High debt, high risk

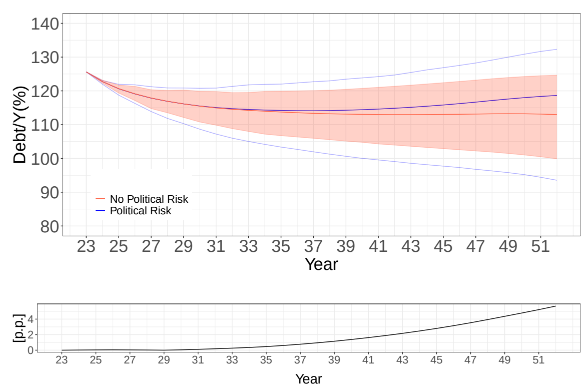
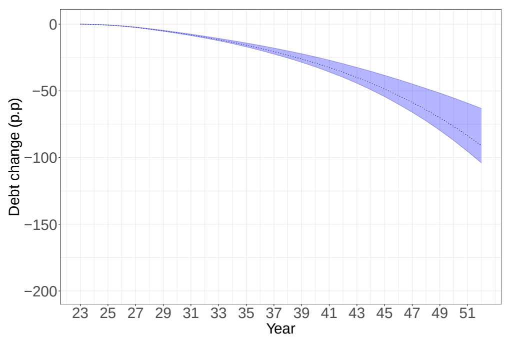


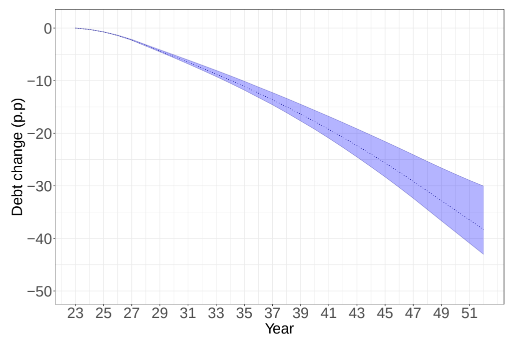
Figure C.2 – Debt impulse response to reforms or a crash for low-risk countries

We display the interquartile fan charts and median differences of debt-to-GDP trajectories after reforms or a crash for low-risk countries. Panels A-B correspond to the political regime of Figure B.1, Panel B, and Panels C-E to Figure B.1, Panel C. Panels C-D are for high-debt countries and Panel E for low-debt. Results are reported for high- and low-yield environments.

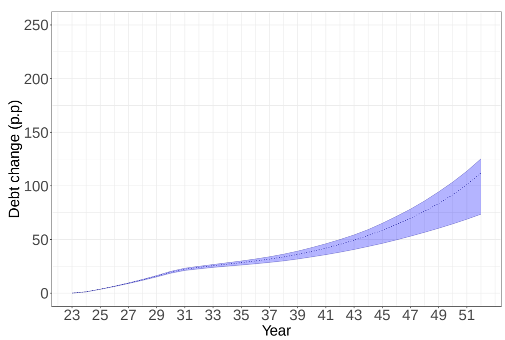
(a) Reforms (HD, HY)



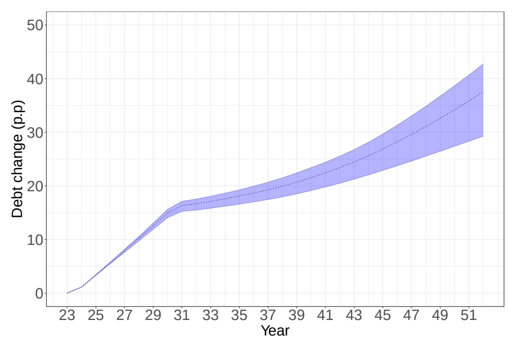
(b) Reforms (HD, LY)



(c) Crash (HD, HY)



(d) Crash (HD, LY)



(e) Crash (LD, LY)

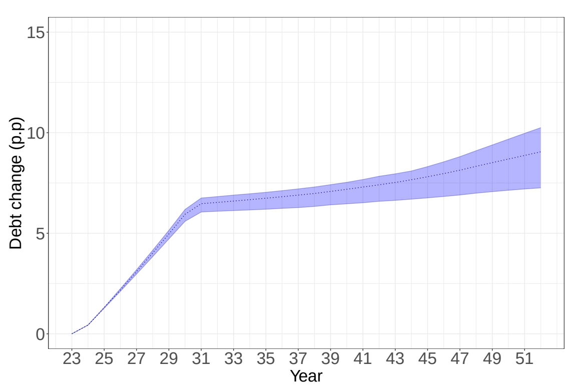
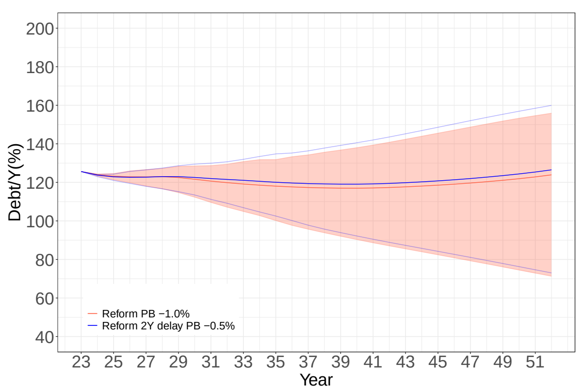


Figure C.3 – Reform delays

We display debt-to-GDP trajectories under reforms that lead to improved political ratings. The coral fan charts are with reforms starting in 2022 with a cost of 1% of GDP for the duration of the improvements. The blue lines display the mean, 25th, and 75th percentiles when improvements are delayed by (a) two years or (b) four years, with corresponding costs of 0.5% and 0% of GDP.

(a) Two-year delay with cost 0.5% GDP



(b) Four-year delay with cost 0% GDP

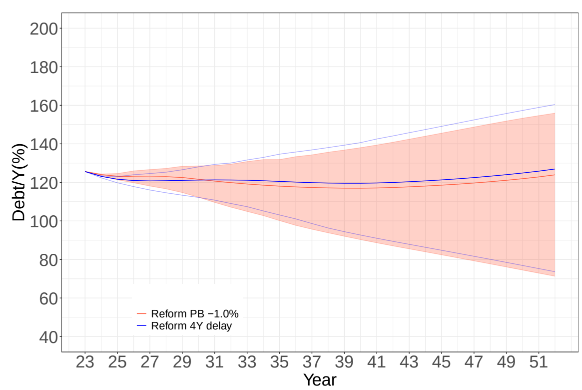
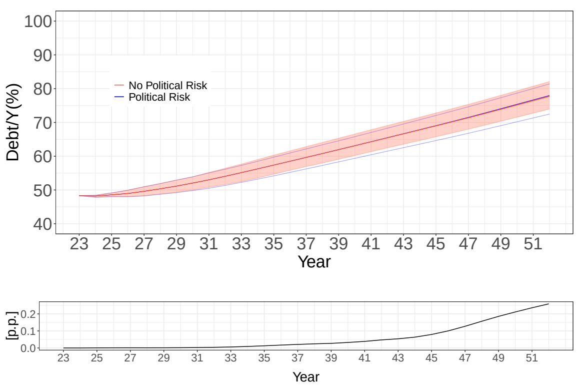


Figure C.4 – Yields and growth channel effects of political risk on debt dynamics

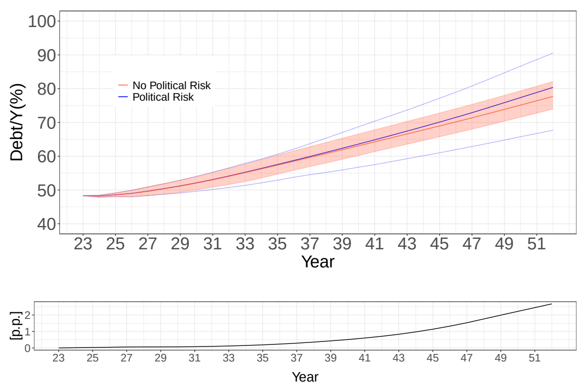
We display debt-to-GDP trajectories with and without political risk, first through (i) the yields channel and (ii) the growth channel. The coral fan charts are without political risk, and the blue lines display the mean, 25th, and 75th percentiles with political risk. Below the fan charts in each panel, we display the increase in mean values when adding political risk in percentage points (pp). Each panel corresponds to different debt levels and under varying levels of political risk, as indicated. The test is conducted in a high-yield environment.

(i) Yields channel

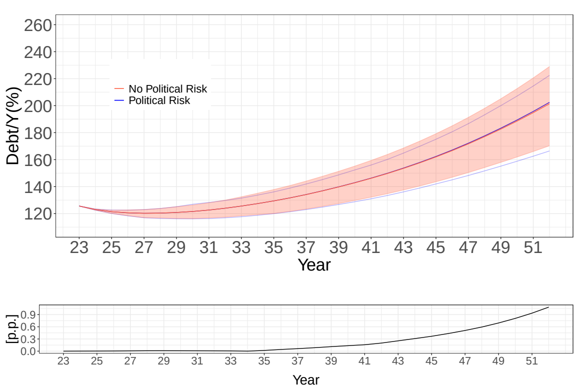
(a) Low debt, low risk



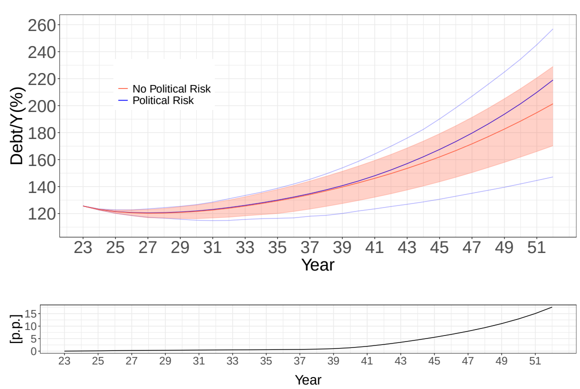
(b) Low debt, high risk



(c) High debt, low risk



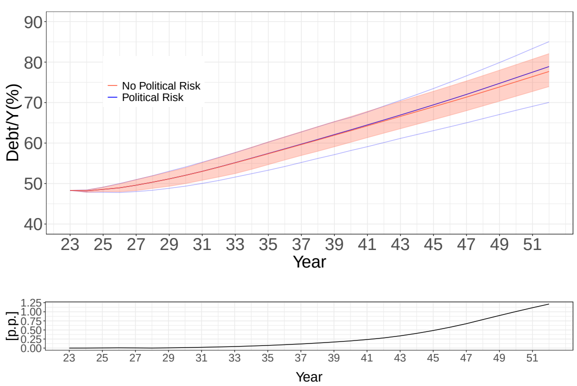
(d) High debt, high risk



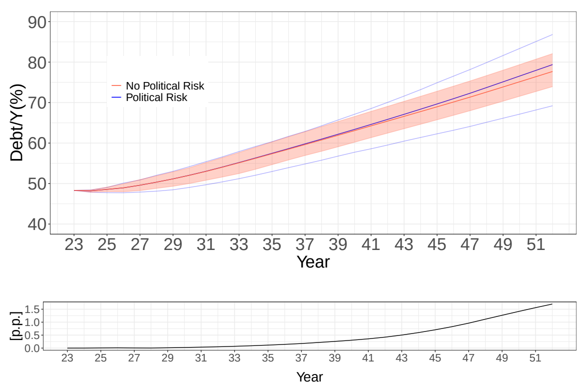
(continued)

(ii) Growth channel

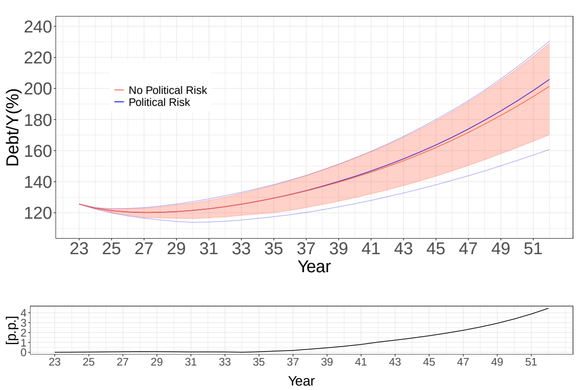
(a) Low debt, low risk



(b) Low debt, high risk



(c) High debt, low risk



(d) High debt, high-Risk

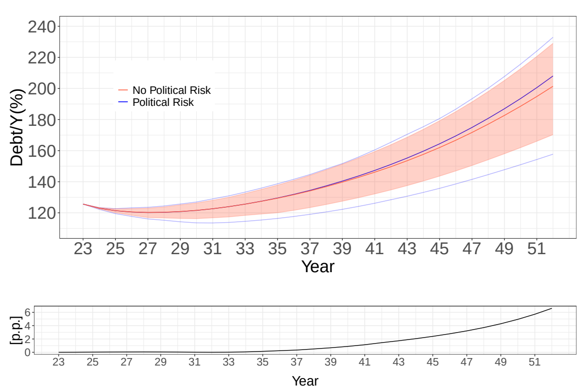


Figure C.5 – Robustness of cost-risk tradeoff with political risk to credit risk premia

We display the tradeoff between the expected cost of debt financing and refinancing risk when accounting for political risk effects under different credit risk premium estimates. We display results for (a) low-risk countries with $\rho = 2$ and (b) high-risk countries with $\rho = 4$, dashed line. In each figure, we show the results without and with political risk and, for comparison, the frontiers from Figure 3, Panel D, for $\rho = 3.25$, solid line.

(a) Low-risk country, $\rho = 2$ **(b)** High-risk country, $\rho = 4$

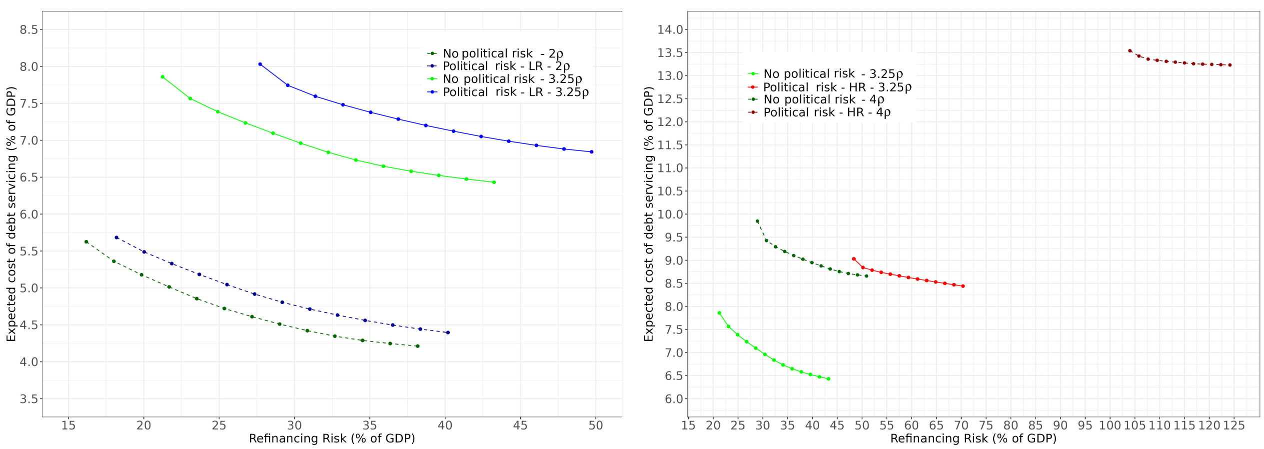


Figure C.6 – Robustness test of debt dynamics to the fat tails of political ratings

We display debt-to-GDP trajectories with political risk on a scenario tree that matches only first and second moments (coral fan charts) and on a tree that matches the skewness and kurtosis of political ratings (blue lines of the mean, 25th, and 75th percentiles). The test is for high-debt, high-risk countries and is conducted in a high-yield environment.

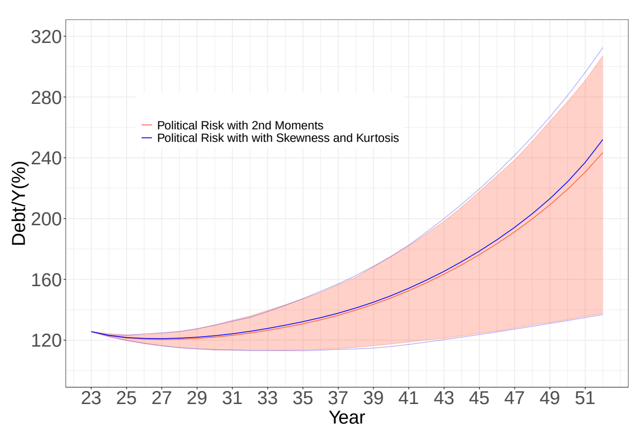
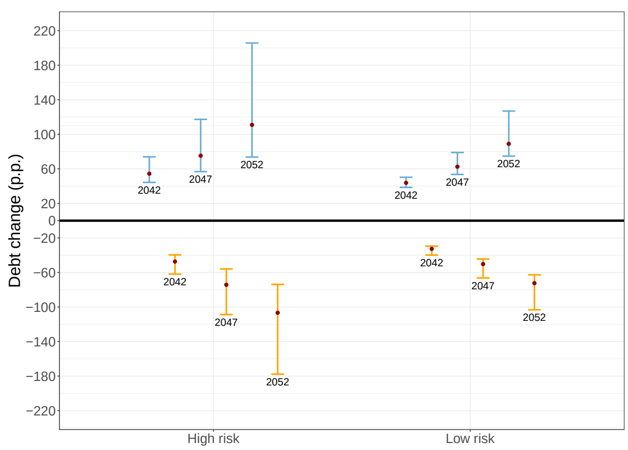


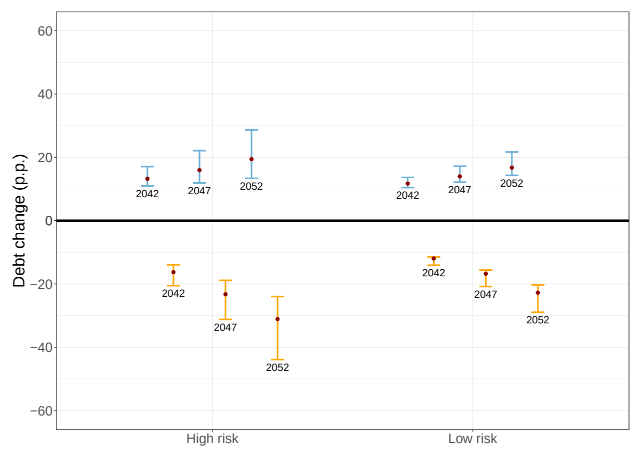
Figure C.7 – Robustness test of debt-to-GDP ratio responses to political rating crashes and reforms.

This figure displays changes in the interquartile range and the mean values of debt-to-GDP ratios for (a) high-debt and (b) low-debt countries due to reforms (below the zero axis) or a political rating crash (above the zero axis). Results are displayed for countries with high or low political debt at the end of 20-, 25-, and 30-year horizons.

(a) High debt



(b) Low debt



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